AN ACTIVITY SPACE APPROACH TO UNDERSTANDING IMMIGRANT ASSIMILATION AND THE IMPACT OF PLACE-BASED EXPOSURES ON HEALTH

A Dissertation

Presented to the Faculty of the Graduate School

of Cornell University

In Partial Fulfillment of the Requirements for the Degree of

Doctor of Philosophy

by

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May 2019

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Cornell University 2019

Individuals frequently spend time outside of their home neighborhoods. The location, composition, and characteristics of the places they visit during the course of routine activities inform our understanding inequality, segregation, and of how social environments shape health. Using data from the Los Angeles Family and Neighborhood Study (LAFANS), I provide evidence that undocumented immigrants, perhaps because of the fear, stigmatization, and disadvantages associated with their immigration status travel fewer miles to fewer total locations and spend time in neighborhoods that have a lower share of white residents and are characterized by more concentrated disadvantage. I also demonstrate the utility of activity spaces as a measure of immigrant assimilation. Finally, I provide evidence that exposure to violent crime near one's activity space destinations is related to elevated levels of C-reactive Protein (CRP), a key indicator of systemic inflammation and cardiovascular disease risk.

BIOGRAPHICAL SKETCH

Brady Alexander Currit was born in Salt Lake City, UT. He received a B.A. in Sociology from Brigham Young University in 2011, a M.A. in Sociology from Brigham Young University in 2013, and M.A. in Sociology from Cornell University in 2016.

ACKNOWLEDGMENTS

I would like to thank Rachel Behler for her endless patience and support. She provided invaluable insight through countless conversations about this dissertation. Her support is quite literally what helped me survive graduate school and is ultimately what got me through this process.

I would also like to acknowledge the opportunities, support, advice, and wisdom offered by Erin York Cornwell. She is a brilliant scholar who taught me how to think and write like a sociologist.

Matthew Hall also provided endless support throughout my graduate school career. His advice, help, and kindness were crucial. I would also like to thank Daniel Lichter for serving on my committee. Additionally, thank you, in no particular order, Sharon Sassler, Steven Alvarado, Kim Weeden, and Benjamin Cornwell for all you have done for me throughout this process. Lastly, I need to acknowledge the help provided by Susan Meyer and the friendship of my other graduate students during my time at Cornell.

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PREFACE

Urban research, dating back to the work of early Chicago theorists has stressed the importance of neighborhood-level factors in shaping social life. These early efforts highlighted the ways that structural characteristics of urban neighborhoods, such as poverty, residential turnover and instability, and ethnic heterogeneity, exert effects on crime, social ties, and the life chances of residents. Many subsequent studies have built on this work, providing evidence of the importance of "place" and extending this logic to connect neighborhood structural characteristics to individuals' mental and physical health.

Recently, scholars have shifted their focus beyond the residential neighborhood in order to consider the impact of the other social environments that individuals pass through during the course of their daily lives. The reasons for this are relatively straightforward. Individuals regularly cross the boundaries of their residential neighborhoods for a variety of daily routine activities. To the degree that individuals spend time in these other non-residential spaces, the features of the physical and social environments and the people they encounter likely have understudied ramifications.

Non-residential environments are, for example, also spaces in which individuals encounter relevant exposures. During the course of daily travel individuals may breathe polluted air, see or experience crime, or observe other forms of social disorder. Social contact also frequently occurs in non-residential spaces, and meaningful social ties form as a result (Small 2004). Casual interactions or passive, regular encounters may also help build norms of informal social control and contribute to feelings of trust (Browning and Soller 2014).

The degree to which non-residential spaces mirror the social segregation one experiences in one's home neighborhood may therefore further reduce opportunities for between-group contact. Indeed, activity spaces, the name frequently given to the totality of environments an individual spends time in, are often as racially segregated as one's residential neighborhood (Jones and Pebley 2014). Understanding whether groups do or do not share the non-residential spaces they visit provides more holistic insight into the social distance between racial/ethnic groups and, potentially, the social isolation of particularly disadvantaged groups.

Activity spaces studies such as this one allows researchers to gain a more comprehensive understand of the degree to which place shapes social life. Furthermore, taking into account the varied geographic locations in which people spend time allows for an understanding of the relative importance of the residential neighborhood compared to other contextual environments.

Importantly, studies of both neighborhood effects and activity spaces must both address concerns with selection. Individuals are not randomly assigned neighborhoods and choice of neighborhood is driven by complex mix of personal preferences, needs, and external constraints. Despite these issues it is still important to understand the distribution of individuals across neighborhoods and the segregation present in individuals' activity spaces. While it is important to keep issues of selection in mind when considering results of neighborhood studies, these analyses provide important insight into the potential ways in which social environment shape and reflect social processes.

In this dissertation, I utilize restricted-access data from an innovative survey, the Los Angeles Family and Neighborhood Study (LAFANS), in order to better understand the differences in activity spaces for undocumented immigrants. The racial/ethnic or socioeconomic composition of the neighborhoods in which activity

space destinations are located provides insight into the types of non-residential environments disadvantaged or marginalized groups have preferences for or access to. The characteristics of activity spaces are indicative of broader social cleavages within a metropolitan area, or how comfortable groups with precarious legal situations, such as undocumented immigrants, feel in traveling outside of their home neighborhoods. Furthermore, studies of segregation that rely solely characteristics of residential neighborhoods may miss the ways in which broader activity spaces can be more integrated, potentially providing opportunities for between-group contact.

Most research on neighborhood effects and residential outcomes or processes has been derived from comparisons between blacks and whites in cities such as Chicago or New York. Considerably less scholarship has been devoted to evaluating the residential outcomes of Latinos. Latinos make up the majority of L.A. County residents, accounting for approximately 49% of the population. Furthermore, Los Angeles County is a longtime immigrant gateway, making data on its residents well-suited for investigations of immigrant incorporation. Given its history as a receiving context for new immigrants, if differences between immigrants and natives are observed in L.A. County, they may represent conservative estimates of these disparities.

Furthermore, this dissertation explores whether occurrences of violent crime near respondents' activity space locations, such as homes, workplaces, places of worship, grocery stores, and healthcare providers, are related to elevated C-reactive protein (CRP) levels. CRP is a key indicator of inflammation related cardiovascular risk and chronic stress and these findings shed light on the health impact of regular, repeated proximity to crime. My findings also highlight how residential and non-residential exposures combine to take a toll on cardiovascular health and suggest that

temporally and spatially consistent exposures to stressors may play a role in shaping disparities in other health outcomes.

CHAPTER 1

HIDING IN THE SHADOWS? THE ACTIVITY SPACES OF UNDOCUMENTED IMMIGRANTS

Abstract

Immigrants who lack legal authorization to live in or work in the United States face many barriers and disadvantages, including the stigma of being undocumented and persistent fear of detection or deportation. Taken together, these disadvantages make it difficult to secure quality of housing in desirable neighborhoods, and may also shape immigrants' activity spaces, resulting in segregation and geographic isolation from other groups. Using data from Wave 2 of the Los Angeles Family and Neighborhoods Study (LAFANS), I compare the characteristics of the activity spaces of undocumented immigrants to those of documented immigrants and native-born racial/ethnic groups. I find that undocumented immigrants report fewer routine activity locations, and that their activity locations tend to be closer to their homes. Undocumented immigrants also tend to spend time in locations characterized by a lower share of non-Hispanic racial/ethnic groups and greater concentrated disadvantage and residential instability. Overall, my results highlight the impact of legal status on stratifying prospects for successful incorporation, and underscore that these impacts extend beyond the residential context.

Introduction

Over the last fifty years, the foreign-born population in the United States has rapidly increased in both size and share of the total population. Approximately 50-million immigrants have arrived over the last 50 years and almost 26 percent of all

foreign-born individuals residing the U.S. hail from Latin America (Passel and Cohn 2017). Understanding Latino immigrants' ultimate chances for success and incorporation into the mainstream is complicated by the non-negligible share which lack legal authorization to live and work in the U.S. A sizeable number of prior studies have provided evidence of the economic difficulties faced by undocumented immigrants.

Undocumented workers fare poorly on the labor market, with low, uncertain wages, frequent workplace exploitation, and weak returns to human capital (Donato et al. 2008), and these socioeconomic disadvantages limit personal financial resources that may be used to attain housing in better neighborhoods. Undocumented immigrants are less likely than other racial/ethnic group to be homeowners, and more likely than any other group except native-born blacks to reside in neighborhoods with few services, persistent problems, and safety concerns (Hall and Greenman 2013). These disparities in residential attainment may be partially due to feelings of fear or stigmatization associated with undocumented status (Cavazoz-Rheg et al. 2007; Willen 2007) that can lead to a reluctance to engage with or limited access to banks, lenders, and other forms of credit (Suro et al., 2002; Bair 2003; Amuedo-Dorantes and Bansak 2006).

Undocumented status may likewise shape immigrants' broader activity patterns. Crucial insight into assimilation is gained by considering non-residential destinations and the degree to which the neighborhoods immigrants spend time in or have access to differ from those of other native-born groups. While residential neighborhood conditions play a critical role in structuring life chances, health, and wellbeing (see Sampson et al. 1999; Robert 1999), most individuals travel outside of their residential neighborhoods for a variety of routine activities—such as for work and also to visit grocery stores, places of worship, and healthcare providers (Sastry et

al. 2002; see also Vallee et al. 2010; Zenk et al. 2011). These broader spatial patterns may represent an understudied indicator of immigrants' relative social integration. Activity patterns may be an earlier sign of assimilation, as they are perhaps more easily changed than one's place of residence or even place of work. Activity patterns also may represent the comfort with which immigrants navigate their new homes or the ways in which assimilation is occurring unevenly across various domains of one's life. The degree to which undocumented immigrants' daily activity patterns are concentrated in more constrained geographic areas, characterized by segregation from native-born racial/ethnic groups, and defined by exposure to socioeconomic disadvantage also has important implications for their well-being, incorporation, and ultimate success in the US.

In this paper, I examine whether undocumented immigrants visit fewer non-residential locations and whether these destinations are located closer to their homes than documented immigrants and native-born groups. I also test whether undocumented immigrants' activity spaces differ from these groups in regards to racial and ethnic composition, concentrated disadvantage, and residential instability. I use data from Wave 2 of the Los Angeles Family and Neighborhood Survey (LAFANS). There are several advantages of using the LAFANS for research on immigrants' activity spaces. First, the LAFANS contains detailed questions on immigrants' legal status, allowing documented and undocumented immigrants to be examined as separate groups. Second, LAFANS employs innovative survey methods to identify locations where individuals conduct daily activities. Using the geographic coordinates of these locations, I am able to construct measures of respondents' activity spaces, or, more specifically, the areas surrounding homes, workplaces, and other locations they visit during daily activities like shopping, attending church, and visiting friends. Importantly, taking activity spaces into account in this way may shed more light on the

broader social segregation of undocumented immigrants, highlighting how they may be isolated from other groups during the course of routine daily activities. This social exclusion may serve to compound the vast array of other disadvantages undocumented immigrants already face.

Background

Immigrants make up an increasingly large segment of the American population. As of 2016, immigrants represent almost 14 percent of the population, with 1 out of every 4 children under 18 years of age in the US living in a family with at least one foreign-born parent (Grieco et al. 2012). Approximately 11.3-million of these immigrants lack legal authorization to live or work in the US (Krogstad et al. 2017). While the number of unauthorized immigrants in the US has not grown significantly since about 2008, undocumented individuals account for 3 percent of the total US population, and around 50 percent of all immigrants from Mexico and Central America. As of 2015, three-quarters of all undocumented immigrants to the U.S. were born in Central or South America (Passel and Cohn 2017).

Given the sheer size of this population, coupled with the growing national political attention that has been focused on undocumented families in recent years as federal detention and deportation efforts have increased in scope and frequency, it is crucial to better understand how legal status contributes to immigrant incorporation and success. Examining the characteristics of the residential and non-residential contexts in which immigrants spend time provides insight into the extent to which daily activities are centered in and around the residential neighborhood and whether undocumented immigrants are more likely than other groups to conduct their daily lives in spaces that are socioeconomically disadvantaged and racially/ethnically segregated.

Previous studies on place effects have often focused on the characteristics of the residential context. Which neighborhoods immigrants are able to secure housing in have important implications for their ultimate incorporation. In particular, residential segregation is both an indicator of and facilitator of assimilation (Massey 1985). By limiting spatial proximity to mainstream groups, segregation can slow sociocultural integration, and make intermarriage and between-group social tie formation less likely (Qian and Lichter 2007; Huckfeldt 1983). The importance of the residential setting is also felt in other determinants of immigrant incorporation, such as social mobility.

However, individuals spend time in many other locations during the course of routine daily activities. For example, a study of adults in L.A. County found that they travel an average of eight miles to locations such as workplaces or grocery stores (see Sastry et al. 2002). This falls well beyond the typical boundaries of the residential census tract (in L.A. County, for example, the average length of a census tract is 0.82 miles), which is the proxy for neighborhood boundaries that is most frequently used in social scientific research. Employed adults also often spend the majority of their waking hours outside of their home census tracts (Robinson 1997).

Taking into account the characteristics of activity spaces, such as the number of routine, daily destinations they visit or how far away from their homes they travel during daily commutes, provides a more holistic view of the degree of ease or comfort with which immigrants navigate their communities, and the social contexts in which they are embedded (see also Mathews 2011). The racial/ethnic and socioeconomic composition of non-residential locations visited during the course of daily life may provide opportunities for between-group contact and access to resources and non-residential exposure to socioeconomically disadvantaged neighborhoods may act as a multiplier on the other barriers to success and well-being faced by undocumented immigrants.

Non-residential and residential daily exposures likely shape immigrants' incorporation. For example, previous studies suggest that characteristics of activity spaces are connected to socioeconomic success, social integration, and even physical health (see York Cornwell and Cagney 2017; Sharp et al. 2015; Jones and Pebley 2014; Matthews 2011; Browning, Soller, and Jackson 2013). The process of assimilation is closely tied to social mobility, and understanding barriers to economic mobility is essential for assessing the prospects of immigrants (see Massey 1981; Piore 1979). Immigrants who live in neighborhoods characterized by concentrated disadvantage may experience slower mobility than those who gain residence in more favorable settings (Portes and Zhou 2003). Residence in a neighborhood characterized by socioeconomic disadvantage is associated with worse economic outcomes for adults (Wodtke et al. 2011), along with other indicators of well-being such as physical and mental health (Browning and Cagney 2002). Neighborhood disadvantage also shapes children's academic success, adolescent deviance, behavioral development, and occupational attainment later in life (Sampson et al. 1999).

Neighborhood context is significant for a multitude of relevant outcomes, in part because where one lives often represents the primary social and normative context in which one is embedded and the people one regularly encounters while navigating daily life. Neighborhood context shapes proximity to key resources, organizations, and institutions (see Robert 1999). The degree to which one's residential context thereby facilitates access to quality schools, resources, and other services varies greatly. Similarly, exposures to problems such as deteriorating local physical conditions, pollutants, noise, or crime often also vary from neighborhood to neighborhood and features of non-residential contexts may attenuate, compound, or moderate the effects associated with the characteristics of one's residential context.

Characteristics of activity spaces may also facilitate social integration by providing opportunities for between-group contact. Even indirect social contact in non-residential locations can lead to a sense of community and familiarity (see Browning, Soller, and Jackson 2015). Adults regularly form meaningful social relationships with those they meet at churches, schools, or childcare centers and these relationships are important sources of support, advice, and information (Small 2009). Employed individuals spend time in the area around their workplaces as they navigate their daily commutes and if they visit local restaurants for recreational activities, lunch, or dinner. Moreover, recent research on activity spaces suggests that neighbors' intersecting non-home routines play an important role in promoting local social cohesion and the development of shared normative expectations (Browning, Soller, and Jackson 2015).

Contact with members of other racial/ethnic groups may speed acculturation, and could increase the likelihood of intergroup social tie formation and even intermarriage. Non-residential locations often differ from one's residential neighborhood in ways that may facilitate access to resources that are not present in the residential setting. For example, activity destinations located in areas characterized by more socioeconomic advantage may be more proximate to mainstream groups and organizations or banks, schools, or other important social institutions. Third, activity locations can provide reprieve from or extend exposure to stressors or threats. More consistent exposure to disadvantage throughout daily life and across destinations likely has implications for immigrants' incorporation. And, finally, non-residential settings provide opportunities for between-group contact that would not traditionally be taken into account in analyses that focus only on the residential neighborhood.

Legal Status and Activity Spaces

Differences in activity spaces likely have consequences for immigrant success and integration, and importantly the severity of these differences may depend on whether or not an immigrant is legally authorized to live in and work in the United States. It is therefore important to understand how characteristics of activity spaces vary for those immigrants who are undocumented. The current political climate, in which deportations and family separations dominate headlines, likely increases feelings of social stigma around undocumented status and heightened law enforcement activity may further exacerbate differences in activity spaces. Importantly, the degree to which undocumented immigrants are socially isolated or segregated from other racial/ethnic groups and are exposed to poverty throughout their daily activities could compound the multitude of other disadvantages they already face.

Undocumented immigrants and their families face significant barriers to economic and social success. They are more likely to have lower wages and experience unsafe workplaces, and they often endure abuse or harassment by their employers (see, for example, Donato and Massey 1993; Flippen 2012; Hall et al. 2010; Massey 1987). Lacking legal status stunts chances for economic or educational advancement (Kaushal 2008; Greenman and Hall 2013) and the stigma surrounding being undocumented can instill fear or anxiety into everyday social encounters or activities (Gonzales et al. 2013).

The stigma and daily fear of detection that often accompany being undocumented also complicates immigrants' interactions with various institutions, landlords or realtors, and employers. Undocumented immigrants are less likely to have access to credit, and are often wary of engaging with banks or lenders (Suro et al. 2002; Amuedo-Dorantes and Bansak 2006). This wariness resembles the avoidance of record-keeping institutions including banks, schools, and employers reported by other vulnerable populations, such as those who have had previous contact with the criminal

justice system (Brayne 2014). Concerns about legal status may similarly shape daily decisions around when and where to engage in routine activities (see also Goldman and Sood 2006).

Any resulting differences in activity space characteristics likely have far-reaching implications for immigrant success and integration—shaping who they come into contact with during daily life, access to resources, and opportunities for social mobility. With this in mind, a first set of hypotheses address the differences in span of activity spaces:

Hypothesis 1a: Undocumented immigrants report fewer activity space destinations than members of other groups.

Hypothesis 1b: The destinations undocumented immigrants visit are located closer to their homes than members of other groups.

Hypothesis 2: Undocumented immigrants live, work, and spend time in neighborhoods with lower shares of white residents and higher shares of Latino and immigrant residents.

Hypothesis 3: Undocumented immigrants live, work, and spend time in neighborhoods with greater concentrated socioeconomic disadvantage and greater residential instability than members of other groups.

Prior research emphasizes that undocumented immigrants are less able to translate socioeconomic resources into favorable residential outcomes (see Hall and Greenman 2013; McConnell; Cort). The neighborhoods that their activity space

destinations are located in may differ from those of other immigrants and those of native-born groups in similar ways. As immigrants gain economic resources, reside in the US for longer, and gain a stronger command of the language they are expected to experience residential attainment that more closely resembles that of US-born individuals of similar socioeconomic standing (Massey 1985). Undocumented immigrants are generally younger, less likely to be partnered upon entry, and have less education and fewer economic resources than their documented counterparts (Hoefer et al., 2011; Passel and Cohn, 2011). As a result, undocumented immigrants may be more likely to reside in immigrant-dense settings. Fear of detection or deportation may lead undocumented to be less likely to seek residence or conduct daily activities beyond immigrant-dense areas.

An important alternative consideration is that immigrants' activity spaces may be shaped by their race/ethnicity. Discriminatory practices or behaviors, and other structural barriers related to race often limit the residential mobility of marginalized groups (Galster and Godfrey 2005; Yinger 1997). Due to racialized barriers to homeownership and residential choices, differences in residential attainment between immigrants and native-born individuals may be partially attributed to their skin color or race/ethnic group affiliation rather than simply immigration-related personal characteristics (see also Massey and Denton 1993). This perspective would suggest that immigrants' activity spaces are comprised of individuals from the same racial/ethnic group, regardless of their legal status or length of residence. For example, it would suggest few differences between the activity spaces of native-born Latinos and documented and undocumented foreign-born Latinos. If differences in the residential attainment between immigrants and native-born individuals are driven by experiences of discrimination or other barriers surrounding race, these barriers would

likely operate similarly to shape activity spaces by limiting immigrants' selection of schools, workplaces, grocery stores, or places of worship. Therefore:

Hypothesis 4: Undocumented immigrants' activity space characteristics and composition will differ both from native-born racial/ethnic groups and from documented immigrants.

The degree of autonomy an individual is able to exercise over which settings to spend time in may vary by type of location. Further, as a result of economic disadvantage, undocumented immigrants may be less likely to have access to a personal vehicle. The geographic area covered by one's activity space also often depends on access to a personal vehicle or the availability of public transport options (Jones and Pebley 2014). Families who lack access to a vehicle may travel fewer miles to routine activity locations, or visit fewer locations.

Therefore, just as being undocumented may limit undocumented immigrants' choices or access to certain types of housing or neighborhoods, it may also restrict the distance they can travel to access resources beyond their own neighborhoods. Instead, daily activities of undocumented immigrants may be constrained within socioeconomically disadvantaged areas, which may present stressors and lack the resources and services available to other groups.

Additionally, the level of racial/ethnic and socioeconomic segregation within a given metropolitan area, and the presence of and location of neighborhoods with a high share of minority or immigrant residents, structure the degree to which non-residential activities can provide opportunities for between-group contact. In this study, I focus on individuals residing in a single metropolitan context, specifically Los Angeles County.

Given the barriers undocumented immigrants face to finding employment, they may have little choice over where their place of work is located. More autonomy is likely exercised when deciding where to grocery shop or attend religious services. If undocumented immigrants actively avoid surveilling institutions, they may thereby spend less time in more advantaged neighborhoods, where these institutions are often located. Furthermore, undocumented immigrants may, during daily activities, choose to avoid higher income neighborhoods or neighborhoods with a higher share of white residents for fear of standing out, drawing attention, or coming into contact with the police. Therefore, I hypothesize that differences in the spaces where documented and undocumented immigrants spend their time will be smallest for work locations, and greatest for residential contexts and for other (non-home, non-work) locations.

Hypothesis 5: The largest differences between undocumented immigrants and other racial/ethnic groups will be observed when examining the characteristics of the spaces where non-home and non-work destinations are located.

Given the importance of this group to America's economic, social, and political future, it is crucially important to better understand the broader spatial integration of undocumented immigrants relative to other racial/ethnic groups. The goal of this study is to expand on past work by examining whether undocumented status is associated with differences in activity spaces. Existing research has primarily focused on residential outcomes and while understanding the quality of and composition of the immediate neighborhood context is important, it is only part of the picture. The characteristics of broader activity patterns shed light on the complex ways in which legal status may structure the daily lives of immigrants. Specifically, I focus on the characteristics of their activity spaces— the number of locations individuals

routinely visit, and the distance between individuals' homes and each location. I also analyze several measures of the racial and socioeconomic composition of activity spaces.

Data and Methods

In order to answer these research questions, I employ restricted-access data from Wave 2 of the Los Angeles Family and Neighborhood Survey (LAFANS), which was collected between 2006-2008. Wave 2 followed up with households who were interviewed for Wave 1 of the LAFANS. Wave 1 of LAFANS was collected in 2000-2002 and was drawn from a stratified random sample of 65 census tracts in Los Angeles County, California. Los Angeles County differs from many other metropolitan areas in the United States in that almost 49-percent of its residents are Hispanic or Latino. Furthermore, Los Angeles has a long history of being a destination for new immigrants. Given the size of the Latino population in L.A. and the general history of Latino immigration, the spatial integration of undocumented Latino immigrants may be more easily facilitated here than in other metropolitan areas. The estimates provided by using the LAFANS therefore may be conservative in that undocumented Latino immigrants may be even more isolated in cities or areas with fewer immigrants and a less established population of their own racial/ethnic group.

Among the selected census tracts, neighborhoods with a higher share of residents at or below the poverty line were oversampled (see Sastry et al. 2006; Sastry and Pebley 2003). Adults and children residing in households in these census tracts were randomly selected for interview in Wave 1, and an effort was made to re-interview all Wave 1 households for Wave 2. Additionally, in Wave 2 a random selection of households who moved into the sampled neighborhoods between 2002 and 2006 were also interviewed, yielding an overall response rate of about 68-percent.

Interviews were conducted in either English or Spanish and households that were unable to complete an interview in either language were excluded. For the purposes of this paper, I focus on all Wave 2 adult respondents (N = 1,745) who were selected as the primary adult respondent for each household and use survey weights that, when applied, provide estimates that are representative of the adult population of Los Angeles County. Of these 1,745 respondents, 1,482 provided valid addresses for a workplace and 1,692 provided a valid address for at least one non-home and non-work location.

Dependent Variables: Activity Space Characteristics and Composition

During the course of the interview, respondents were asked to provide the addresses of several key locations that were important to their lives. From the provided addresses, I considered a total of seven destinations for which addresses were provided: home, workplaces (respondents may provide addresses for up to two employers), medical care facilities that they go to for either emergency or routine care (considered separately), church or place of worship, and grocery store. I employed packages for processing geographic information in R 3.4.2 and used the geocoded coordinates of these seven destinations in order to construct several measures of the characteristics and the composition of the respondents' activity spaces.

First, in order to get a sense of how many locations comprise each respondent's activity space, I calculated a count of how many of the seven possible locations they provided a valid address for. I also generated a measure of the total number of "other" locations reported, which includes all locations that are neither their place of residence nor place of work. Next, I generated several measures of the geographic concentration of the respondent's activities, or how far these activities are from the respondent's home. These measures include the distance, in miles, from each

respondent's home to every other location for which they provide a valid address. Specifically, I focus on the average distance from the respondent's home to their workplaces and the average distance from their home to all other locations (meaning non-home and non-work destinations). All distance measures are logged in order to correct for skewness.

I joined the geographic coordinates of each location with the boundaries of the Census block group within which they fall and used the resulting block group identifiers to attach sociodemographic data from the 2005-2009 American Community Survey (ACS) 5-year estimates. After categorizing each of the potential seven locations as either home, work, or other, I estimated the average block group characteristics of the locations falling within each of these categories. Specifically, this results in three measures: the proportion of the residents in the block group who are non-Hispanic white, Hispanic, and foreign-born.

The last two dependent variables I consider are the concentrated socioeconomic disadvantage and residential instability present in a respondent's activity space. Both of these measures are widely used in studies of social context and urban sociology and I follow existing work in their construction (see Sharp, Denny, and Kimbro 2015; Browning and Cagney 2002; Sampson et al. 1997). Beginning with all Census block groups in LA, I derive concentrated disadvantage from a factor analysis with oblique rotation on six variables (all proportions): persons in poverty, persons under 18 years of age, households on public assistance, female-headed households with children, persons without a high school degree, and persons who are unemployed. Residential instability is similarly derived from factor analysis with oblique rotation including the full range of block groups in LA County and the proportion of owner-occupied housing units and the proportion of persons living in the same house as the prior year.

Documentation Status, Nativity, and Race/Ethnicity

The LAFANS contains detailed questions regarding immigrants' legal or visa status. First, respondents were asked for their country of birth. If they were born outside of the U.S., they were asked whether or not they are a U.S. citizen. If they do not have citizenship, respondents were asked a follow-up question as to whether they have permanent residence or a green card. If they answer no to this, they are further prompted as to whether they have any document, such as a visa, which would allow them to stay in the U.S. for a limited amount of time and whether this document is currently still valid. I define as undocumented immigrants those who were born outside of the U.S., and do not currently have citizenship, legal permanent residence or a green card, or a valid visa. Anyone who meets these criteria is assigned a "1," and all others are assigned a "0."

Data on undocumented populations is difficult to collect. Understandably, those who lack legal authorization to live or work in the United States may be hesitant to participate in a survey. There is also a concern that those who do choose to participate may misrepresent their legal status. This would imply that some of the respondents who are identified in this study as documented are in fact undocumented. In this case, any differences I observe would be conservative in nature.

However, the method of determining immigrants' status used in the LAFANS represents one of the techniques found to be most reliable in immigrant surveys (see Bachmeier, Van Hook, and Bean 2014). Previous studies have found little evidence that non-response to questions about legal status is a concern with the LAFANS and the profile of the unauthorized population from LAFANS is similar to those yielded by other independent estimates of the Los Angeles County population (see Bachmeier, Van Hook, and Bean 2014). I combine this measure of documentation status with

measures of race/ethnicity and nativity. The result is a six-category indicator with the following categories: undocumented Latino immigrant (202), documented Latino immigrant (609), native-born Latino (202), native-born non-Hispanic white (504), native-born non-Hispanic black (136), and native-born non-Hispanic other race (91).

Controls

All analyses include several relevant sociodemographic controls. I adjust for any differences in activity spaces that may be due to life course factors or gender differences by including respondent age and whether the respondent identifies as female (1=yes). I also account for marital status (married = 1), household composition (1 = at least one child under 18 present in the household), and annual family income (logged). Finally, I include characteristics that may be associated with more frequent reasons to spend time away from home, or facilitate non-home activities. These include employment status (employed=1), and whether the family owns a personal vehicle (1 = yes).

Analytic Strategy

In order to compare the activity spaces of undocumented immigrants to those of documented immigrants and other native-born racial/ethnic groups, I execute a series of Poission regression models for outcome variables that represent a count and ordinary least squares regression models for continuous outcomes. Given that individuals may have varying degrees of autonomy in choosing where to live, work, or engage in routine activities, I estimate models for the characteristics of each of these types of locations separately. Models on outcomes representing workplaces characteristics exclude respondents who are not employed. Similarly, models with outcomes that represent the characteristics of other locations exclude respondents who

only provide the address for their place of residence. All models are adjusted using survey weights provided by LAFANS and include the relevant controls.

Results

Table 1 presents the descriptive statistics for the variables used in the analysis, first for the full sample and then separately for undocumented immigrants and documented immigrants. Undocumented immigrants account for approximately 11.6-percent of the analytic sample, while 34.6-percent of the respondents are documented immigrants. Overall, respondents report an average of 3.84 activity space locations. Undocumented immigrants report an average of 3.47 total locations and 1.49 locations that are categorized as "other"—representing neither place of residence nor workplaces. In contrast, documented immigrants, on average, report an average of 3.82 total locations and 1.86 other locations. Undocumented immigrants reside in block groups that are an average of 15.1-percent non-Hispanic White, 63.4-percent Hispanic, and 41.1-percent immigrant, and their residential block groups are characterized by both above-average concentrated disadvantage and above-average residential instability.

Geographic Concentration of Activity Spaces

I first consider the geographic concentration of the daily activities of undocumented immigrants, specifically, whether they have fewer routine activity locations than other groups and whether the locations they routinely visit are located closer to their homes. Table 1 presents the differences between undocumented immigrants and documented immigrants in regard to the key dependent variables, along with significance tests for these differences. Without adjusting for sociodemographic characteristics, undocumented immigrants report a lower average total number of activity space locations (3.47 compared to 3.82), a lower number of

non-home and non-work locations (1.49 compared to 1.86), and fewer average miles (logged) from their homes to their other destinations than documented immigrants (0.42 compared to 0.76).

Turning to the results from the regression analyses, I find that the majority of these differences between undocumented immigrants and documented immigrants withstand the inclusion of sociodemographic controls, with the exception of the number of locations that respondents reported. The first two models presented in Table 2 contain the results of Poisson regression models of, first, the number of locations reported, and, second, the number of non-home and non-work locations. I find that undocumented immigrants report fewer total locations than native-born Latinos ($b = 0.076$; $p < 0.05$), native-born whites ($b = 0.059$; $p < 0.10$), and native-born backs ($b = 0.134$; $p < 0.001$). Documented immigrants also report more total locations ($b = 0.043$) than undocumented immigrants, although this difference is not statistically significant. However, when considering only non-home and non-work locations, I find that undocumented immigrants report fewer other locations than any other group, including documented immigrants.

In the third model in Table 2, I find that undocumented immigrants travel fewer miles to work than native-born Latino, black, and other race adults. Similarly, both documented immigrants and native-born white adults are estimated to travel more miles to work ($b = 0.417$ for documented immigrants and $b = 0.167$ for native-born whites), but these differences are not statistically significant. Importantly, my results indicate that undocumented immigrants travel fewer miles from their homes to non-work locations than documented immigrants ($b = 0.338$; $p < 0.05$). All other native-born racial/ethnic groups travel further when engaging in non-work routine activities than undocumented immigrants. Taken together, these results provide evidence for Hypotheses 1a and 1b. More specifically, they indicate a degree of geographic

concentration in the daily lives of undocumented immigrants that is distinct from other groups. Undocumented immigrants report fewer non-home and non-work locations, and when they do visit these places during the course of routine activities they tend to stay closer to their places of residence than any other groups.

Composition of Activity Spaces

In Table 1, I find that undocumented immigrants live in neighborhoods with a lower average share of White residents than documented immigrants. Furthermore, their neighborhoods have a higher share of Hispanic residents. At least in regard to the unadjusted means, I find no significant difference between documented immigrants and undocumented immigrants in regard to the share of immigrants in their residential neighborhoods. I find similar differences in regard to the racial/ethnic composition of workplaces and other locations.

Table 3 contains the results of regression models examining the racial/ethnic composition of the block groups in which individuals spend time. For each outcome, I estimate separate models for the composition of the residential neighborhood, workplaces, and the average composition of the block groups where other destinations are located. The outcome for the first three models is average proportion of non-Hispanic white residents within the block group. Undocumented immigrants, compared to documented immigrants, live in block groups that have a lower share of non-Hispanic white residents ($b = 0.047$; $p < 0.10$). Native-born non-Hispanic whites, blacks, and those of other race groups also reside in neighborhoods with a higher proportion of white residents. The differences in block group composition are less clear for workplaces. While undocumented immigrants work in block groups that have, on average, lower shares of non-Hispanic whites than those of native-born white ($b =0.225$; $p < 0.001$) and native-born black adults ($b =0.111$; $p < 0.10$), I find no

significant difference in terms of workplace block group proportion white between undocumented immigrants and the other groups.

Differences in the proportion of non-Hispanic white residents are most stark when considering the block groups of other activity space locations. Undocumented immigrants spend time in areas with a lower share of non-Hispanic whites than any other group when visiting non-residential and non-work destinations. Taken together, these results provide support for Hypothesis 2. These routine daily activities take place in areas that have a share of white residents that is approximately 7.3-percent lower than those of documented immigrants ($p < 0.05$), 8.2-percent lower than those of native-born Latinos ($p < 0.01$), 31.2-percent lower than those of native-born Whites ($p < 0.001$), and 19.5-percent lower than those of native-born blacks ($p < 0.001$).

The outcome for the next three models presented in Table 3 is average block group percent Hispanic. Undocumented immigrants live in block groups that are a higher percent Hispanic than those of documented immigrants ($b = -0.076$; $p < 0.05$). Furthermore, I find that the residential block groups of every other racial/ethnic group, aside from native-born Latinos, have a lower share of Hispanic residents. The neighborhoods where the workplaces of undocumented immigrants are located have, on average, a higher share of Hispanic residents than those of native-born white, black, and other race adults. Again, the largest differences are found when considering the average composition of the neighborhoods where other types of destinations are located. In line with Hypothesis 3, the share of Hispanic residents in the neighborhoods where the non-work and non-home destination of undocumented immigrants are located is approximately 12.2 percentage points higher than that of documented immigrants ($p < 0.01$), and the proportion of Hispanic residents in these places is higher for undocumented immigrants than it is for any native-born racial/ethnic group.

The final three models in Table 3 examine the average share of immigrants in the block groups comprising respondents' activity spaces. I find that undocumented immigrants live in neighborhoods with a higher share of immigrants than the neighborhoods of native-born racial/ethnic groups. However, I do not find a significant difference in residential block group proportion immigrant between undocumented and documented immigrants. Similarly, I find that the other locations visited by undocumented immigrants are located in block groups that have a higher share of immigrants than those visited by members of native-born racial/ethnic groups, but the difference for this outcome between undocumented immigrants and documented immigrants is relatively small (b = -0.032) and fails to reach statistical significance. These results provide some evidence that immigrants in general have fewer opportunities for contact with native-born individuals in their residential and other, non-work settings, regardless of legal status.

Structural Disadvantage in Activity Spaces

In addition to neighborhood racial/ethnic composition, exposure to concentrated disadvantage and residential instability in activity spaces may have important consequences for the incorporation outcomes of immigrants. Looking at the unadjusted means for documented immigrants and undocumented immigrants, in Table 1, I find that undocumented immigrants' homes and other destinations are located in neighborhoods with higher concentrated disadvantage and higher residential instability than those of documented immigrants. Their workplaces are also located in neighborhoods with more concentrated disadvantage, although I do not find a significant difference in regard to the residential instability of neighborhoods surrounding workplaces.

The first three models presented in Table 4 provide the estimates from regression models with average block group concentrated disadvantage as the

outcome. Note that both concentrated disadvantage and residential instability are standardized scales, and as such the units are standard deviations and a score of "0" would represent a block group with a degree of concentrated disadvantage or residential instability that is average for LAFANS respondents in Los Angeles County. I find that the residential neighborhoods of undocumented immigrants are characterized by higher concentrated disadvantage than both documented immigrants ($b = -0.653$; $p < 0.001$) and every other native racial/ethnic group. Similarly, the places where undocumented immigrants work are characterized by more concentrated disadvantage than the workplaces of every other group (for documented immigrants, $b = -0.481$; $p < 0.001$). The differences in concentrated disadvantage that undocumented immigrants are exposed to in their residential neighborhoods are not reduced when they leave home to complete daily activities. In other locations, undocumented immigrants spend time in block groups that have higher concentrated disadvantage than those visited by any other group.

The final three models in Table 4 present the estimates associated with average block group residential instability. The neighborhoods of undocumented immigrants are characterized by more residential instability than almost every other group, including documented immigrants ($b = -0.164$; $p < 0.05$). However, the residential instability of undocumented immigrants is similar to that of the residential neighborhoods of native-born blacks. The block groups where undocumented immigrants work have more residential instability than those of native-born Latinos, native-born whites, and native-born blacks. As was the case for each of the previous outcomes related to neighborhood composition, clearer differences are found when examining block groups surrounding other locations. The block groups surrounding the non-home and non-work destinations in which undocumented immigrants spend

time are characterized by more residential instability than any those of any other group.

One of the central goals of this analysis is to disentangle when differences in composition may be attributed to undocumented status, or when they instead represent an experience shared among either all immigrants or other racial/ethnic minorities regardless of legal status. To this end, I predict the average composition of the block groups associated with each type of location for each group. For ease of interpretation, I present the resulting estimates in Figure 1. Providing support for my final hypothesis, Figure 1 indicates that differences in composition are clearest when examining non-home and non-work locations. For example, spaces for these other activityes are approximately 15.2-percent non-Hispanic white and 67.3-percent Hispanic. In contrast, for documented immigrants these locations are predicted to be approximately 22.5-percent non-Hispanic white and 55-percent Hispanic.

Figure 1 also further highlights that the degree of concentrated disadvantage that undocumented immigrants encounter in the places in which they spend time. Across home, work, and other locations where undocumented immigrants spend time, levels of concentrated disadvantage are over half a standard deviation above the average for Los Angeles County. No other group approaches this degree of exposure to concentrated disadvantage. The highest average block group concentrated disadvantage reported by any other group is associated with the residential neighborhoods of native-born black respondents, who are predicted to live in neighborhoods that are 0.256 standard deviations above the county average.

Discussion

Undocumented immigrants represent a large and increasingly vulnerable segment of the U.S. foreign-born population. In addition to the sheer size of

undocumented adult population, the development and incorporation prospects of a large number of children depend on parents with precarious legal status. Previous work has found that undocumented immigrants have poor returns on human capital, limited employment prospects, and low earnings (Donato and Massey, 1993; Flippen, 2012; Greenman and Hall, 2013; Hall et al., 2010). Undocumented status restricts the neighborhoods in which immigrants are able to secure housing, and neighborhood contexts provide varied opportunities for between-group contact, access to resources, and exposure to stressors. However, largely because of data limitations, previous studies have often been limited to a focus on only residential attainment and the effects of residential neighborhoods on immigrant outcomes. Such approaches are unable to fully account for variations in the extent to which individuals travel outside of the boundaries of their residential neighborhood. I employed innovative data on the legal status of and routine destinations of adults in Los Angeles County in order to examine how undocumented status shapes the characteristics of the activity spaces and the composition of the contexts in which individuals spend time.

Undocumented immigrants often report fear of detection, a fear of interacting with institutional actors, or a concern of stigma associated with unauthorized status (Suro et al., 2002; Abrego, 2011). This wariness may contribute to more limited daily activities, or the geographic concentration of routine activities in a narrower area. Indeed, I find that undocumented immigrants report fewer total activity destinations than native-born racial/ethnic groups and fewer non-home, non-work locations than documented immigrants. The non-home and non-work locations that undocumented immigrants visit are located closer to their homes than those of any other group.

Between-group contact and opportunities for interaction with native-born groups are integral to immigrant incorporation. Yet, for each measure of the racial/ethnic composition of activity spaces, undocumented immigrants visit areas

with a lower average share of non-Hispanic white residents and a higher average share of Hispanic residents than any other group, including other immigrants who have documentation. These areas also have a lower average share of non-immigrants than the areas surrounding the other locations of any native-born racial/ethnic group.

Undocumented immigrants also live in, work in, and visit neighborhoods characterized by more concentrated socioeconomic disadvantage than any other group. And they live in neighborhoods that with more residential instability than any group aside from native-born non-Hispanic blacks. The differences I find do not appear to be attributable to immigrants' personal or immigration-related characteristics. The process of assimilation and the prospects of immigrants are closely tied to their social mobility, and the degree of exposure to concentrated disadvantage undocumented immigrants face in every context in which they spend time have dire implications for their success in the U.S. Past research also indicates that individuals who are disproportionately exposed to social features of disadvantage, such as high concentrations of poverty and unemployment, are more likely to experience a myriad of physical and mental health problems (see Sampson et al. 2002). Furthermore, the residential instability undocumented immigrants encounter in their residential and non-work settings may disrupt their ability to build lasting social networks, and the degree of social organization and institutional infrastructure available in the settings in which they spend time.

These results come with a few limitations. While this method of inferring legal status based on self-reported citizenship and visa status is generally accepted, it is not without its drawbacks. Some individuals may be hesitant to discuss their legal status with an in-person interviewer. However, past research using the LAFANS has found that such a cooling effect on self-report of documentation is rare. Even if some immigrants incorrectly identify as documented, it would likely mean that the results I

present here are conservative estimates of the differences between undocumented and documented immigrants. Second, I measure activity spaces using the provided addresses of destinations that are important to the daily lives of respondents. This represents an innovation on typical approaches that often only provide information on where an individual resides. However, this approach does not capture the full range of possible locations individuals spend time in throughout the day. Recent approaches have begun employing smartphone GPS tracking to better understand the full scale and range of activities and such an approach promise to result in enriching insights for activity research and research on places effects.

Finally, the data are drawn exclusively from L.A. County. The differences in the activity spaces of undocumented immigrants in other metropolitan contexts may depart from what I observe here. L.A. has a long history as an immigrant destination and a large Latino population. Given the presence of more established ethnic networks and resources and of more institutions aimed at aiding immigrant incorporation, undocumented immigrants may be better able to navigate or have access to a wider range of neighborhoods. Disparities may be larger or more profound outside of immigrant gateways, where Latino immigrants may feel more out of place, noticeable, or may be met with a less welcoming immigrant climate.

These limitations aside, in this study, I provide evidence that undocumented status has pervasive impacts on individuals' activity patterns. The importance of undocumented status extends beyond residential attainment, and is associated with more geographically concentrated activity locations, differential social segregation, and more exposure to socioeconomic disadvantage while navigating daily life. Future research needs to better explore the complex ways in which these differences are connected to other outcomes of interest, such as health or economic mobility, and better understand the reasons behind these differences.

Table 1. Descriptive statistics for key variables

	Full sample		Undocumented immigrants		Documented Immigrants	
	Mean (or proportion)	Std. Dev.	Mean (or proportion)	Std. Dev.	Mean (or proportion)	Std. Dev.
Characteristics of activity spaces						
Total number of locations reported	3.835	(0.036)	3.465	(0.094)	3.817 **	(0.055)
Total number of other locations reported	1.883	(0.032)	1.493	(0.089)	1.863 ***	(0.051)
Average distance from home to workplace (logged)	1.109	(0.082)	0.845	(0.196)	1.131	(0.085)
Average distance from home to other locations (logged)	0.890	(0.043)	0.419	(0.112)	0.755 **	(0.061)
Residential neighborhood composition						
Block group proportion non-Hispanic white	0.281	(0.011)	0.097	(0.016)	0.215 ***	(0.016)
Block group proportion Hispanic	0.500	(0.013)	0.733	(0.027)	0.577 ***	(0.020)
Block group proportion immigrant	0.354	(0.007)	0.446	(0.022)	0.409	(0.010)
Block group concentrated socioeconomic disadvantage	0.128	(0.034)	0.978	(0.082)	0.185 ***	(0.050)
Block group residential instability	0.051	(0.022)	0.334	(0.052)	0.113 ***	(0.032)
Workplace(s) neighborhood composition						
Avg. block group proportion non-Hispanic white	0.333	(0.012)	0.151	(0.020)	0.275 ***	(0.019)
Avg. block group proportion Hispanic	0.436	(0.013)	0.634	(0.033)	0.504 **	(0.023)
Avg. block group proportion immigrant	0.337	(0.007)	0.411	(0.021)	0.387	(0.011)
Avg. block group concentrated socioeconomic disadvantage	-0.010	(0.036)	0.656	(0.117)	0.149 ***	(0.061)
Avg. block group residential instability	0.116	(0.027)	0.225	(0.061)	0.192	(0.040)
Other locations neighborhood composition						
Avg. block group proportion non-Hispanic white	0.298	(0.009)	0.122	(0.019)	0.219 ***	(0.013)
Avg. block group proportion Hispanic	0.476	(0.011)	0.702	(0.027)	0.557 ***	(0.018)
Avg. block group proportion immigrant	0.349	(0.006)	0.431	(0.021)	0.397	(0.008)
Avg. block group concentrated socioeconomic disadvantage	0.080	(0.030)	0.738	(0.097)	0.241 ***	(0.042)
Avg. block group residential instability	0.166	(0.021)	0.386	(0.062)	0.168 **	(0.032)
Race/ethnicity, nativity, and documentation status						
Undocumented immigrant	0.116					
Documented immigrant	0.349					
Native Latino	0.116					
Native white	0.289					
Native black	0.078					
Native other	0.052					
Individual sociodemographic characteristics						
Age	47.920	(0.781)				
Female	0.522					
Married	0.543					
Children under 18	0.239					
Income (logged)	3.364	(0.143)				
Employed	0.620					
Have vehicle	0.860					
N	1,745		202		609	

+ p < 0.10
* p < .05
** p < .01
*** p < .001

Table 2. Coefficients from regression models on the characteristics of activity spaces, including the number of routine activity locations, and the distance from home to work and from home to other locations

	Total number of locations reported		Total number of other locations reported		Avg. distance from home to workplace(s)		Avg. distance from home to other locations	
	b	(SE)	*b*	(SE)	*b*	(SE)	*b*	(SE)
Race/ethnicity, nativity, and documentation status								
Undocumented immigrant *(ref.)*	- - -		- - -		- - -		- - -	
Documented immigrant	0.043	(0.030)	0.121+	(0.065)	0.417	(0.264)	0.338*	(0.159)
Native Latino	0.076*	(0.034)	0.200**	(0.071)	0.724*	(0.305)	0.626***	(0.187)
Native White	0.059+	(0.035)	0.158*	(0.067)	0.167	(0.318)	0.565**	(0.189)
Native Black	0.134***	(0.037)	0.301***	(0.074)	0.873**	(0.298)	1.028***	(0.212)
Native other race	0.072	(0.052)	0.155	(0.108)	0.911*	(0.359)	0.970***	(0.260)
Sociodemographic characteristics								
Age	0.003***	(0.001)	0.006***	(0.001)	-0.010+	(0.005)	-0.000	(0.003)
Female	-0.015	(0.019)	-0.038	(0.034)	0.166	(0.169)	0.195*	(0.086)
Married	0.001	(0.020)	0.008	(0.036)	0.147	(0.187)	0.170+	(0.096)
Children under 18	-0.021	(0.019)	-0.049	(0.037)	-0.108	(0.175)	0.061	(0.090)
Family income (logged)	0.001	(0.005)	0.003	(0.010)	-0.042	(0.034)	-0.007	(0.017)
Vehicle in household	-0.006	(0.029)	-0.030	(0.054)	0.344	(0.238)	0.227+	(0.135)
Constant	1.158***	(0.051)	0.262*	(0.104)	0.933**	(0.357)	0.061	(0.211)
R-squared					0.043		0.094	
N	1745		1745		1482		1692	

Note: Workplace characteristics are the average of all of a respondent's places of employment if they have multiple employers. Other locations include: grocery stores, places of worship, abd health care facilities

Estimates presented are survey-adjusted for the probability of selection and the sampling design

+ p < 0.10

* p < .05

** p < .01

*** p < .001

Table 3. Coefficients from regression models on the racial/ethnic composition of the block groups around home, work, and other locations

	Avg. block group proportion non-Hispanic white						Avg. block group proportion Hispanic						Avg. block group proportion immigrant					
	Residential neighborhood		Workplace		Other locations		Residential neighborhood		Workplace		Other locations		Residential neighborhood		Workplace		Other locations	
	b	(SE)	*b*	(SE)	*b*	(SE)	*b*	(SE)	*b*	(SE)	*b*	(SE)	*b*	(SE)	*b*	(SE)	*b*	(SE)
Race/ethnicity, nativity, and documentation status																		
Undocumented immigrant *(ref.)*	- - -		- - -		- - -		- - -		- - -		- - -		- - -		- - -		- - -	
Documented immigrant	0.047+	(0.027)	0.040	(0.039)	0.073*	(0.030)	-0.076*	(0.037)	-0.083	(0.058)	-0.122**	(0.040)	-0.018	(0.027)	0.001	(0.031)	-0.032	(0.025)
Native Latino	0.040	(0.027)	0.017	(0.044)	0.082**	(0.030)	-0.067	(0.042)	-0.069	(0.064)	-0.138**	(0.042)	-0.085**	(0.029)	-0.021	(0.034)	-0.080**	(0.027)
Native White	0.308***	(0.034)	0.225***	(0.046)	0.312***	(0.034)	-0.344***	(0.041)	-0.273***	(0.060)	-0.345***	(0.041)	-0.154***	(0.030)	-0.099**	(0.032)	-0.140***	(0.027)
Native Black	0.095+	(0.050)	0.111+	(0.061)	0.195***	(0.043)	-0.240***	(0.055)	-0.194**	(0.068)	-0.313***	(0.045)	-0.148***	(0.031)	-0.062	(0.051)	-0.176***	(0.030)
Native other race	0.169***	(0.040)	0.085	(0.061)	0.193***	(0.048)	-0.297***	(0.042)	-0.246**	(0.077)	-0.330***	(0.054)	-0.096**	(0.034)	-0.065	(0.046)	-0.111**	(0.041)
Sociodemographic characteristics																		
Age	0.001	(0.001)	-0.001	(0.001)	-0.001	(0.001)	-0.001	(0.001)	0.002	(0.001)	0.001	(0.001)	-0.000	(0.000)	0.001	(0.001)	0.000	(0.000)
Female	0.003	(0.021)	0.105***	(0.029)	0.014	(0.018)	0.004	(0.023)	-0.089**	(0.032)	-0.014	(0.021)	0.007	(0.013)	-0.038*	(0.016)	0.000	(0.011)
Married	0.051*	(0.023)	0.134***	(0.032)	0.027	(0.020)	-0.065*	(0.026)	-0.112**	(0.038)	-0.020	(0.024)	-0.046**	(0.014)	-0.058***	(0.017)	-0.033**	(0.012)
Children under 18	-0.027	(0.019)	-0.126***	(0.025)	-0.030	(0.019)	0.060**	(0.023)	0.125***	(0.027)	0.039+	(0.022)	-0.008	(0.013)	0.034*	(0.015)	-0.001	(0.012)
Family income (logged)	0.011**	(0.004)	0.026**	(0.009)	0.010**	(0.003)	-0.015**	(0.005)	-0.026*	(0.011)	-0.015***	(0.004)	-0.004	(0.002)	-0.012**	(0.005)	-0.001	(0.002)
Employed	0.010	(0.024)	- - -		-0.004	(0.019)	0.003	(0.026)	- - -		0.019	(0.021)	-0.000	(0.015)	- - -		0.030*	(0.013)
Vehicle in household	0.042+	(0.024)	0.071	(0.043)	0.031	(0.023)	-0.042	(0.033)	-0.075	(0.050)	-0.036	(0.031)	-0.002	(0.016)	0.009	(0.027)	-0.010	(0.017)
Constant	0.001	(0.039)	0.062	(0.070)	0.109**	(0.037)	0.819***	(0.051)	0.701***	(0.087)	0.716***	(0.047)	0.467***	(0.037)	0.390***	(0.044)	0.419***	(0.035)
R-squared	1739		982		1673		1739		982		1673		1739		982		1673	
N	0.301		0.257		0.291		0.290		0.216		0.266		0.201		0.154		0.182	

Note: Workplace characteristics are the average of all of a respondent's places of employment if they have multiple employers. Other locations include: grocery stores, places of worship, and health care facilities.
Estimates presented are survey-adjusted for the probability of selection and the sampling design
+ p < 0.10
* p < .05
** p < .01
*** p < .001

Table 4. Coefficients from regression models on the presence of concentrated socioeconomic disadvantage and residential instability in the block groups around home, work, and other locations

	Avg. block group concentrated disadvantage						Avg. block group residential instability					
	Residential neighborhood		Workplace		Other locations		Residential neighborhood		Workplace		Other locations	
	b	(SE)	*b*	(SE)	*b*	(SE)	*b*	(SE)	*b*	(SE)	*b*	(SE)
Race/ethnicity, nativity, and documenation status												
Undocumented immigrant *(ref.)*	- - -		- - -		- - -		- - -		- - -		- - -	
Documented immigrant	-0.653***	(0.107)	-0.481*	(0.190)	-0.461***	(0.129)	-0.164*	(0.072)	-0.081	(0.089)	-0.219**	(0.069)
Native Latino	-0.617***	(0.122)	-0.582**	(0.191)	-0.589***	(0.127)	-0.295***	(0.075)	-0.192*	(0.090)	-0.314***	(0.065)
Native White	-1.134***	(0.121)	-0.981***	(0.192)	-1.018***	(0.136)	-0.486***	(0.077)	-0.271**	(0.100)	-0.281***	(0.072)
Native Black	-0.607***	(0.172)	-0.793**	(0.246)	-0.744***	(0.166)	-0.174	(0.113)	-0.398*	(0.170)	-0.263*	(0.108)
Native other race	-1.153***	(0.139)	-0.575*	(0.239)	-0.803***	(0.190)	-0.292***	(0.085)	-0.173	(0.149)	-0.351*	(0.143)
Sociodemographic characteristics												
Age	-0.003	(0.002)	0.006	(0.005)	0.002	(0.002)	-0.003+	(0.002)	0.003	(0.003)	0.001	(0.002)
Female	-0.053	(0.063)	-0.145+	(0.084)	-0.053	(0.056)	0.016	(0.040)	0.047	(0.066)	0.019	(0.043)
Married	-0.177*	(0.072)	-0.325***	(0.098)	-0.096	(0.061)	-0.229***	(0.043)	-0.156*	(0.067)	-0.090*	(0.044)
Children under 18	0.297***	(0.070)	0.270**	(0.085)	0.199**	(0.063)	-0.061	(0.041)	-0.011	(0.063)	0.013	(0.039)
Family income (logged)	-0.012	(0.012)	-0.044	(0.030)	-0.012	(0.013)	0.016**	(0.006)	0.015	(0.015)	0.021*	(0.009)
Employed	-0.055	(0.068)	- - -		0.057	(0.067)	-0.031	(0.046)	- - -		0.043	(0.051)
Vehicle in household	-0.133	(0.091)	-0.179	(0.128)	-0.172*	(0.077)	0.028	(0.056)	0.033	(0.099)	-0.085	(0.055)
Constant	1.255***	(0.153)	0.822**	(0.258)	0.795***	(0.172)	0.528***	(0.091)	0.092	(0.154)	0.365**	(0.124)
R-squared	1739		975		1672		1739		977		1672	
N	0.263		0.189		0.234		0.163		0.049		0.049	

Note: Workplace characteristics are the average of all of a respondent's places of employment if they have multiple employers. Other locations include: grocery stores, places of worship, and health care faci

The scale for concentrated disdvantage includes the following variables: percent unemployed, percent under 18, percent on public assistance, percent with less than high school educational attainment, and percent poverty

The scale for residential instability includes the following variables: percent of housing units that are owner-occupied, and percent of households in the same house as the prior year.

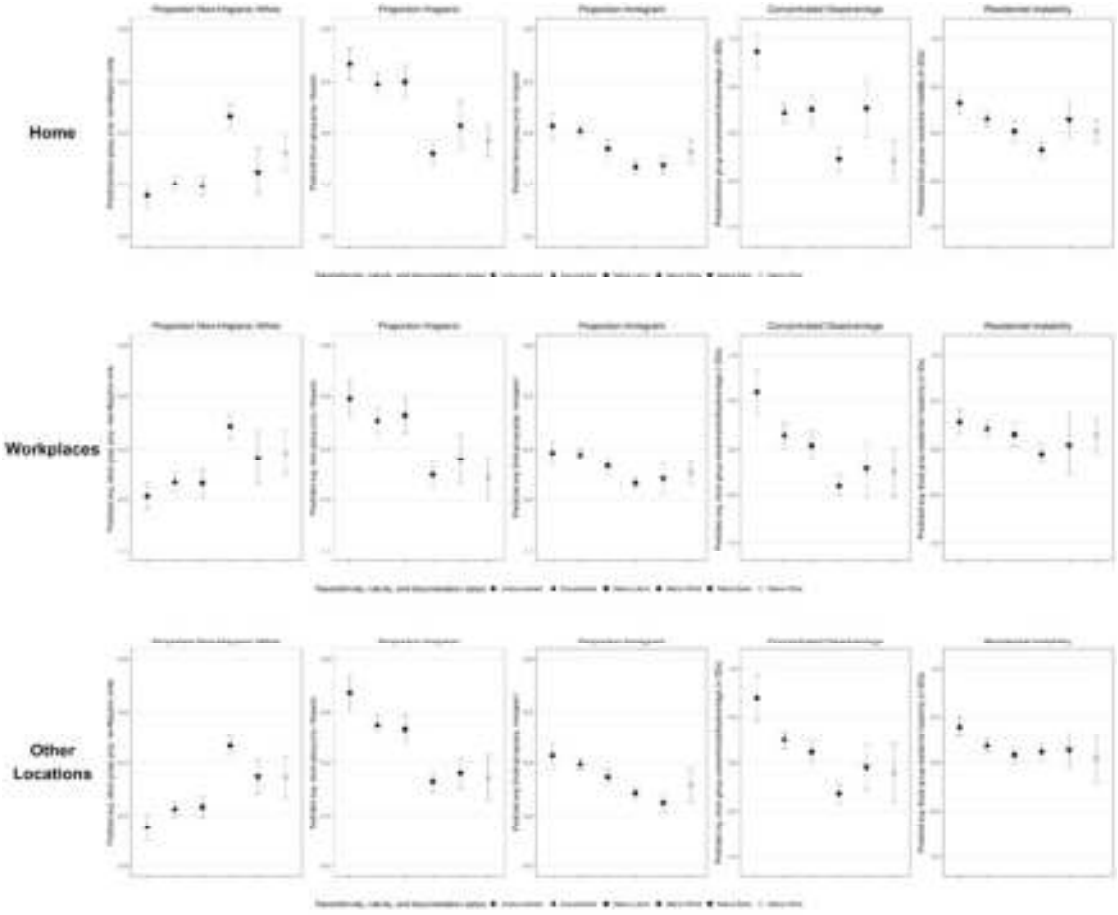
+ $p < 0.10$

* p < .05

** p < .01

*** p < .001

Figure 1. Predicted average characteristics of the block groups associated with home, work, and other locations, by race/ethnicity, nativity, and documentation status



REFERENCES

Alba, Richard D., Logan, John R., 1991. "Variations on two themes: racial and ethnic patterns in the attainment of suburban residence." *Demography* 28 (3), 431–453.

Amuedo-Dorantes, Catalina, Bansak, Cynthia, 2006. "Money transfers among banked and unbanked Mexican immigrants." *Southern Economic Journal*, 374–401.

Bair, Sheila C.2003. "Improving Access to the US Banking System among Recent Latin American Immigrants." *Center for Public Policy and Administration.*

Brayne, S. 2014. "Surveillance and System Avoidance: Criminal Justice Contact and Institutional Attachment." *American Sociological Review* 79(3):367–91.

Cavazos-Rehg, P. A., Zayas, L.H., & Spitznagel, E. L. (2007). Legal status, emotional wellbe- ing and subjective health status of Latino immigrants. Journal of the National Medical Association, 99(10), 1126–1131

Chavez, L. (1998). Shadowed lives: Undocumented immigrants in American society (2nd Ed.). Fort Worth, TX: Harcourt, Brace, Jovanovich College Publishers.

Cornelius WA, Chavez LR, Jones OW. Mexican Im- migration and Access to Health Care.LaJolla, Calif: Center for US-Mexican Studies, UCSD; 1984

Donato, Katharine M., Massey, Douglas S., 1993. "Effect of the immigration reform and control act on the wages of Mexican migrants." *Social Science Quarterly* 74, 523–541.

Flippen, Chenoa, 2012. "Laboring underground: the employment patterns of Hispanic immigrant Men in Durham, NC." *Social Problems* 59 (1), 21–42.

Galster, George and Erin Godfrey. 2005. “By Words and Deeds: Racial Steering by Real Estate Agents in the U.S. in 2000.” *Journal of the American Planning Association* 71(3):251–68.

Goldman, Dana P., James P. Smith, and Neeraj Sood. 2006. “Immigrants and the Cost of Medical Care.” *Health Affairs* 25(6):1700–1711.

Greenman, Emily, Hall, Matthew, 2013. “Legal status and educational transitions for Mexican and Central American immigrant youth.” *Social Forces* 91 (4), 1475–1498.

Grieco, Elizabeth M; Yesenia D. Acosta, G. Patricia de la Cruz, Christine Gambino, Thomas Gryn, Luke J. Larsen, Edward N. Trevelyan, and Nathan P. Walters. 2012. “The Foreign-Born Population in the United States: 2010.” *American Community Survey Reports.*

Hall, Matthew and Emily Greenman. 2013. “Housing and Neighborhood Quality among Undocumented Mexican and Central American Immigrants.” *Social Science Research* 42(6):1712–25.

Hall, Matthew and Jonathan Stringfield. 2014. “Undocumented Migration and the Residential Segregation of Mexicans in New Destinations.” *Social Science Research* 47: 61-78.

Hall, Matthew, Greenman, Emily, Farkas, George, 2010. “Legal status and wage disparities for Mexican immigrants.” *Social Forces* 89 (2), 491–513.

Huckfeldt, Robert R. 1983. “Social Contexts, Social Networks, and Urban Neighborhoods: Environmental Constraints on Friendship Choice.” *American Journal of Sociology* 89(3):651–69.

Iceland, John and Melissa Scopilliti. 2008. “Immigrant Residential Segregation in U.S. Metropolitan Areas, 1990-2000.” *Demography* 45(1):79–94.

Jones, Malia and Anne R. Pebley. 2014. “Redefining Neighborhoods Using Common Destinations: Social Characteristics of Activity Spaces and Home Census Tracts Compared.” *Demography* 51(3):727–52.

Krogstad, Jens Manuel; Jeffrey Passel and D’Vera Cohn. 2017. “5 Facts About Illegal Immigration in the U.S.” *Pew Research Center*.

Massey, Douglas S., 1987. “Do undocumented migrants earn lower wages than legal immigrants?” *International Migration Review* 21, 236–274.

Massey, Douglas S., Akresh, Ilana Redstone, 2006. “Immigrant intentions and mobility in a global economy: the attitudes and behavior of recently arrived U.S. immigrants.” *Social Science Quarterly* 87 (5), 954–971.

Massey, Douglas S., Denton, Nancy A., 1993. *American Apartheid: Segregation and the Making of the Underclass.* Harvard University Press.

Massey, Douglas. 1981. “Dimensions of the New Immigration to the United States and the Prospects for Assimilation.” *Annual Review of Sociology* 7: 57-85.

Matthews, Stephen A. 2011. “Spatial Polygamy and the Heterogeneity of Place: Studying People and Place via Egocentric Methods.” Pp. 127–43 in *Communities, Neighborhoods, and Health*.

Piore, M. J. 1979. *Birds of Passage: Migrant Labor and Industrial Societies*. NY: Cambridge U. Press.

Qian, Zhenchao; Daniel Lichter. 2007. “Social Boundaries and Marital Assimilation: Interpreting Trends in Racial and Ethnic Intermarriage.” *American Sociological Review* 72(1): 68-94.

Robert, Stephanie A. 1999. “Socioeconomic Position and Health: The Independent Contribution of Community Socioeconomic Context.” *Annual. Review of Sociology.* 25:489–516.

Sampson, Robert J., Jeffrey D. Morenoff, and Felton Earls. 1999. “Beyond Social Capital: Spatial Dynamics of Collective Efficacy for Children.” *American Sociological Review* 64(5):633–60.

Sastry, Narayan, Ann Pebley and Zonta M. 2002. “Neighborhood definitions and the spatial dimension of daily life in Los Angeles (CCPR Working Paper 033-04).” Los Angeles: California Center for Population Research, University of California–Los Angeles.

Sharp, Gregory, Justin T. Denney, and Rachel T. Kimbro. 2015. “Multiple Contexts of Exposure: Activity Spaces, Residential Neighborhoods, and Self-Rated Health.” *Social Science and Medicine* 146:204–13.

South, Scott J., Kyle Crowder, and Erick Chavez. 2005. “Geographic Mobility and Spatial Assimilation among U.S. Latino Immigrants.” *International Migration Review* 39(3):577–607.

Suro, Roberto, Bendixen, Sergio, Lowell, B. Lindsa, Benavides, Dulce C., 2002. Billions in Motion: Latino Immigrants, Remittances, and Banking. Report of Pew Hispanic Center and Multilateral Investment Fund.

Suro, Roberto, Bendixen, Sergio, Lowell, B. Lindsa, Benavides, Dulce C., 2002. “Billions in Motion: Latino Immigrants, Remittances, and Banking.” *Report of Pew Hispanic Center and Multilateral Investment Fund.*

Vallee, J., Cadot, E., Grillo, F., Parizot, I., & Chauvin, P. 2010. “The combined effects of activity space and neighbourhood of residence on participation in preventive health-care activities: The case of cervical screening in the Paris metropolitan area (France).” *Health & Place,* 16, 838–852.

Vega, W. A., Sribney, W. M., Aguilar-Axiola, S., & Kolody, B. 2004. “12-month prevalence of DSM-III-R psychiatric disorders among Mexican Americans:

Nativity, social assimilation, and age determinants." *Journal of Nervous and Mental Disease*, 192(8), 532–541.

Willen, S. S. 2007. "Toward a critical phenomenology of "illegality": State power, criminality and abjectivity among undocumented migrant workers in Tel Aviv, Israel." *International Migration*, 45(3), 8-38.

Wodtke, G. T., D. J. Harding, and F. Elwert. 2011. "Neighborhood Effects in Temporal Perspective: The Impact of Long-Term Exposure to Concentrated Disadvantage on High School Graduation." *American Sociological Review* 76(5):713–36.

Yinger, John, 1997. Closed Doors, *Opportunities Lost: The Continuing Costs of Housing Discrimination.* Russell Sage Foundation.

York Cornwell, Erin; Kathleen A. Cagney. 2017. "Aging in Activity Space: Results From Smartphone-Based GPS-Tracking of Urban Seniors." *Journal of Gerontology: Social Sciences* 00 (00): 1-12.

Yu, Zhou and Dowell Myers. 2007. "Convergence or Divergence in Los Angeles: Three Distinctive Ethnic Patterns of Immigrant Residential Assimilation." *Social Science Research* 36(1):254–85.

Zenk, S.N., Schulz,A. J., Matthews, S.A.,Odoms-Young, A.,Wilbur, J.,Wegrzyn, L., Stokes, C. 2011. "Activity space environment and dietary and physical activity behaviors: A pilot study." Health and Place, 17, 1150–1161.

CHAPTER 2

DIVERGENT PATHS: THE EFFECT OF UNDOCUMENTED STATUS ON THE RESIDENTIAL AND ACTIVITY SPACE ASSIMILATION OF IMMIGRANTS IN LOS ANGELES COUNTY

Abstract

Theories of assimilation often hypothesize a narrowing of the differences in residential attainment between immigrants and native-born whites as immigrants reside in the U.S. for a longer duration of time. Immigrants who lack legal authorization to live in or work in the U.S. may encounter particularly high barriers … housing and neighborhoods undocumented immigrants are able to secure residence in. Immigration status shape where they are able to or prefer to spend other time, or the types of neighborhoods they avoid during the course of daily activities. An underexplored component of spatial assimilation is the role of activity spaces—a concept that broadens beyond the residential neighborhood to include areas where individuals work and engage in other routine activities. The degree to which immigrants' routine activity patterns come to resemble those of native-born groups may shed new light on patterns of assimilation. Using longitudinal data from the Los Angeles Family and Neighborhoods Study (LAFANS), I assess the impact of undocumented status on changes in the residential attainment and activity space characteristics of immigrants over time. I find that undocumented immigrants are less likely to become homeowners. They also experience more household crowding and and live in areas characterized by more poverty than other groups. These disparities between undocumented immigrants and other groups persist or widen over time, while some disparities between documented immigrants and native-born groups narrow.

Taking into account activity space characteristics in this way sheds light on the broader spatial isolation and social exclusion of undocumented immigrants and the unique hurdles this group faces in the assimilation process.

Introduction

Since 1970 the foreign-born population in the United States has increased in both size and share of the total population, dramatically reshaping the demographic composition of cities throughout the country. Approximately 50-million immigrants have arrived over the last 50 years, the vast majority of which hail from Mexico or other Central and South American countries. Given the size of the Latino immigrant population in the United States, it is important to better understand how the process of incorporation and assimilation unfolds.

Typically, immigrant assimilation is thought to involve a narrowing of differences between immigrants and native-born groups in language ability, socioeconomic status, homeownership, housing quality, and neighborhood socioeconomic and demographic characteristics (Massey 1984; Hall and Greenman 2012). Over time, immigrants with higher earnings and longer stays in the U.S. are more likely to live in suburban and other more-advantaged neighborhoods than more recent arrivals (Adelman et al., 2001; Alba et al., 2000; South et al., 2005a, 2005b; Clark, 2003; Rosenbaum and Friedman, 2006). But, focusing solely on changes in the socioeconomic and demographic composition of undocumented immigrants' residential spaces may overlook important components of their broader spatial integration.

The process of spatial assimilation may also extend to immigrants' activity spaces—the spatial environments they spend time in during the course of routine activities. Most individuals travel outside of the residential neighborhood for a variety

of activities—such as for work and also to visit grocery stores, places of worship, and healthcare providers (Sastry et al. 2002; see also Vallee et al. 2010; Zenk et al. 2011). As immigrants reside in the U.S. for longer, their routine activity locations may become more similar to those of native-born groups. Activity patterns likely shift more rapidly as the barriers to change are lower than, for example, becoming a homeowner or moving to a new neighborhood. The degree to which both the residential and non-residential contexts of daily activities reflect socioeconomic and racial/ethnic integration or segregation is an understudied component of immigrant incorporation.

Immigrants' legal status in particular, whether they have legal authorization to live in and work in the U.S., may have pervasive impacts on how they navigate their daily lives. Lacking legal status lends a precariousness and fragility to daily life that may be difficult to overcome. Being undocumented is associated with more dangerous workplaces, barriers to employment and education, uncertain and low wages, and a near constant fear of discovery, deportation, or family separation (Donato et al. 2008; Flippen 2012; Hall et al. 2010). Previous research has also found important disparities in residential attainment, neighborhood quality, and neighborhood racial/ethnic integration between undocumented immigrants and other groups (Hall and Greenman 2013). For these reasons, immigrants who lack legal authorization are consistently one of the most economically and socially disadvantaged groups in the U.S.

My goal in this study is to examine Latino immigrants' residential and activity space assimilation over time, with a focus on the role of legal status. Using two waves of data on adults from the Los Angeles Family and Neighborhood Study (LAFANS) collected between the years of 2000 and 2008, I examine whether the disparities between documented immigrants and natives in regard to homeownership, household crowding, and the racial/ethnic and socioeconomic composition of their activity spaces are more likely to narrow over time than are the differences between undocumented

immigrants and natives. In contrast with prior studies, I make use of the LAFANS' innovate collection of the geographic coordinates of routine activity destinations such as homes, workplaces, and the places where respondents shop, worship, and receive medical care in order to construct measures of respondents' activity spaces, or, more specifically, the composition of the areas surrounding these locations. Taking into account activity space characteristics in this way sheds light on the broader spatial isolation and social exclusion of undocumented immigrants and the unique hurdles this group faces in the assimilation process.

Background

Spatial integration is a key facet of assimilation (see Duncan and Lieberson 1959; Massey 1985; Warner and Stole 1945). Contemporary assimilation research, rooted in Massey's (1985) model of "spatial assimilation," posits that the spatial distance between immigrants and natives, most frequently measured as whether they share residential neighborhood contexts, is widest immediately following arrival. The spatial assimilation perspective suggests that new immigrants to initially settle in ethnic enclaves out of social and economic necessity, drawing on established ethnic networks in order to ease their transition. As immigrants acculturate and learn the language, upwardly mobile immigrants are expected to relocate to higher income neighborhoods with better amenities and a larger share of native-born residents. As the social and economic differences between immigrants and natives narrow, the spatial distance between these two groups is also expected to be reduced.

Considerable research has substantiated the notion that with longer durations of residence in the U.S., differences between newcomers and native-born individuals become attenuated (Alba and Nee 1997, 2003; Gordon 1964). Higher earning immigrants who have resided in the country for longer are more likely to be

homeowners (Alba and Logan 1992; Krivo 1995), less likely to experience household crowding and other housing-related deficiencies (Hall and Greenman 2010; Krivo 1995), and are more likely to reside in neighborhoods with a higher share of native-born White and higher income residents (Adelman et al. 2001).

However, most previous studies on locational attainment and spatial integration have focused solely on immigrants' residential attainment. Housing is a crucial determinant of quality of life and homeownership is a key socioeconomic milestone in the assimilation process which often provides access to better neighborhoods, but spatial integration encompasses more than just the sharing of residential spaces (see Logan et al. 1996; 2002). Spatial overlap in the other contexts in which daily activities take place may be an overlooked component of immigrant incorporation. A non-trivial amount of daily life is spent beyond the boundaries of the residential neighborhood. For example, most employed adults spend the majority of waking hours outside of their home census tracts. And, other routine activities such as grocery shopping or attending religious services also regularly take individuals beyond their neighborhood boundaries (see Sastry et al. 2002; Robinson 1997).

Focusing only on immigrants' residential neighborhoods overlooks the opportunities for between-group contact provided by routine daily activities. Visiting destinations such as workplaces, grocery stores, and places of worship provide opportunity for contact with groups that may not be represented in immigrants' home neighborhoods. Immigrants' activity spaces, the term used to refer to the totality of locations visited during daily life, may also differ from their residential areas on a number of dimensions, including socioeconomic composition and the availability of institutions, amenities, retail shops, and services (Jones and Pebley 2014). However, given that few studies have directly examined the characteristics of immigrants' activity spaces it remains unclear whether disparities in activity space characteristics

become attenuated as immigrants reside in the U.S. for longer, following a path toward integration similar to that envisioned by spatial assimilation theory with respect to residential attainment.

The degree to which differences in activity space characteristics between immigrants and native-born groups narrow over time may depend on an immigrant's race/ethnicity. Indeed racial/ethnic disparities in residential outcomes and processes are persistent in part because structural barriers limit the housing and neighborhoods minorities have access to (Alba and Logan 1991). Racial residential preferences combined with the discriminatory behavior and policies of various institutions and actors, ranging from banks to real estate agents or landlords, stratify housing and neighborhood opportunities along racial/ethnic lines (Yinger 2002; Yinger 1997; Massey and Denton 1993).

Prior studies have found that activity spaces also tend to be relatively segregated, with non-residential activities taking place in areas with racial compositions that reflect the individual's personal demographic characteristics (Jones and Pebley 2014). To date, the majority of extant research on residential outcomes has primarily evaluated differences between blacks and whites. Considerably less is known about the residential and activity space outcomes of Latinos, one of the fastest growing minority groups and one that accounts for a sizeable portion of all new immigrants. And, especially for Latino immigrants, legal status may also shape patterns of immigrant assimilation, including residential attainment and spatial integration.

Legal Status and Activity Space Assimilation

Approximately 11-million undocumented immigrants reside in the US, the majority of which come from either Mexico or other Central American nations

(Hoefer et al. 2011; Passel and Cohn 2011). Undocumented immigrants face many disadvantages and encounter significant obstacles to socioeconomic mobility. Undocumented workers have lower wages, are less likely to receive raises or promotions, and are eligible for and receive fewer benefits (Donato et al. 2008; Suro et al., 2002; Bair 2003; Amuedo-Dorantes and Bansak 2006). Undocumented workers are exposed to worse workplace conditions, are more likely to be employed in situations with safety hazards, and more frequently experience workplace harassment. Being undocumented also impedes educational achievement and attainment, and is associated with worse health outcomes (Arbona et al. 2010; Cavazos-Rehg et al. 2007).

Upon entry, undocumented immigrants also tend to be younger, single, and have fewer financial holdings (Hoefer et al. 2011; Passel and Cohn 2011). Age, race/ethnicity, and socioeconomic disparities may influence undocumented Latino immigrants' preferences for, or access to, non-residential activity destinations in majority White or higher income neighborhoods.

However, differences between documented and undocumented immigrants may be due to more than the demographic or socioeconomic composition of the two groups. Lacking legal authorization presents its own set of challenges. Undocumented immigrants are often less able to achieve homeownership, diminishing their ability to secure housing in better neighborhoods (Hall and Greenman 2013). The relationship between undocumented immigrants and landlords or real estate agents is frequently problematic, due to a power imbalance resulting from their precarious legal vulnerability. Fear of discovery or detection may lead undocumented immigrants to avoid some housing options or landlords altogether or to be less able to advocate for or report any housing-related issues that arise (Cavazoz-Rheg et al. 2007; Willen 2007). Undocumented immigrants are often unable to secure home-loans, and are hesitant to

engage with record-keeping institutions such as banks or other lenders (Suro et al., 2002; Bair 2003; Amuedo-Dorantes and Bansak 2006). This echoes the system avoidance of other groups with similarly legal tenuous legal situations, such as those who have had previous contact with the criminal justice system (Brayne 2014). Previous research demonstrates that these groups avoid record-keeping institutions such as schools, banks, employers, and hospitals as a strategy aimed at reducing the likelihood of future arrest or incarceration.

In the same vein, undocumented immigrants often report that a fear of detection or deportation pervades daily life, resulting in near context anxiety. It is probable that these concerns influence their activity spaces, or the contexts in which their routine destinations are located.

The consideration of activity spaces in the process of immigrant assimilation also sheds light on more short-term and lower-cost changes, compared to the standard focus on residential mobility. Routine destinations included in activity spaces introduce heterogeneity in the cost, effort, and time required to change spatial exposures. For example, given the barriers undocumented immigrants face to finding employment, they may have less choice over where their place of work is located or may be less able to secure employment outside of ethnic enclaves. But decisions about where to shop, on the other hand, may by easily changed – and shifts in the routes used to move from one place to another may change over the course of a few days. If undocumented immigrants actively avoid surveilling institutions, they may choose to spend less time in more advantaged neighborhoods, where banks, institutions, and other important resources are often located. They may also try to avoid higher income neighborhoods or neighborhoods with a higher share of white residents for fear of standing out, drawing attention, or coming into contact with the police.

Taken together, it is likely that over time the spatial integration processes of undocumented immigrants depart from those of documented immigrants. The same pressures and fears likely do not operate to constrain the activity space incorporation of documented Latino immigrants. As they spend time in the country and experience acculturation, upwardly mobile documented immigrants may be better able to achieve broad spatial incorporation, thereby reducing the spatial distance between themselves and native-born groups in regard to both their residential attainment and the composition of the non-residential contexts in which they spend time.

The present paper focuses on examining the patterns of spatial integration over time for both undocumented and documented immigrants relative to native-born racial/ethnic groups. Activity spaces characterized by racial/ethnic segregation and poverty may compound the many disadvantages already faced by undocumented individuals. The degree to which immigrants' activity patterns change over time may reveal important insights into immigrants' ability to achieve integration.

I use two waves of data from a survey of Los Angeles County adults in order to examine the residential attainment and activity space characteristics of undocumented and documented Latino immigrants relative native-born whites. Within this framework, a first set of hypotheses emerges regarding the initial disparities expected between undocumented and documented immigrants, as compared to native-born groups:

Hypothesis 1a: *Compared to native-born whites, undocumented immigrants are less likely to be homeowners, live in less crowded housing, and have residential neighborhoods and activity spaces with higher poverty, greater shares of Hispanic or foreign-born residents, and lower shares of white residents.*

Hypothesis 1b: *Compared to native-born whites,, documented immigrants are less likely to be homeowners, live in more crowded housing, and have residential neighborhoods and activity spaces with higher poverty, greater shares of Hispanic or foreign-born residents, and lower shares of white residents*

However, over time the differences between documented immigrants and native-born groups likely become more attenuated. Undocumented immigrants may be less able to overcome their disadvantages. Accordingly:

Hypothesis 2a: *Over time, disparities between undocumented immigrants and native-born groups in housing conditions, residential neighborhood conditions, and activity space conditions persist.*

Hypothesis 2b: *Over time, disparities between documented immigrants and native-born groups in housing conditions, residential neighborhood conditions, and activity space conditions decline.*

Closing gaps in housing, residential, and activity space conditions would reflect assimilation of documented immigrants; but undocumented immigrants may not experience the same process. As a result, undocumented immigrants remain disadvantaged in regard to their residential attainment and highly segregated in both their home neighborhoods and in contexts of daily life. Thus:

Hypothesis 3: *Over time, disparities between undocumented immigrants and documented immigrants in regard to residential attainment and activity space characteristics widen.*

Data and Methods

In order to answer these questions, I use restricted-access longitudinal data from the Los Angeles Family and Neighborhood Survey (LAFANS). Wave 1 of the LAFANS was collected between 2000 and 2002 and was drawn from a stratified random sample of 65 census tracts in Los Angeles County, California. Among the selected census tracts, neighborhoods with a higher share of residents at or below the poverty line were oversampled (see Sastry et al. 2006; Sastry and Pebley 2003). Adults and children residing in households in these census tracts were randomly selected for interview in Wave 1, and an effort was made to re-interview all Wave 1 households for Wave 2. In both Wave 1 and Wave 2, collected between 2006 and 2008, interviews were conducted in either English or Spanish and households that were unable to complete an interview in either language were excluded.

For the purposes of this study, I focus only on the primary adult respondent surveyed from each household sampled in Los Angeles County. Furthermore, I limit my analyses to three groups: undocumented Latino immigrants, documented Latino immigrants, and native whites. The final analytic sample of panel respondents who are members of the groups of interest and have valid data on all variables used in this study is 866. The LAFANS provides panel weights that are designed to decrease bias in the extent to which the sample is representative of the adult population residing in L.A. County at the time of Wave 1 and still living there at Wave 2. The weights account for the sampling design, including the oversampling of households with children and the households in the poorest census tracts, and include an attrition adjustment.

Dependent Variables

All outcomes are recorded in both Wave 1 and Wave 2 and are measured similarly at both time points. In order to analyze residential attainment, I consider two housing-related outcomes: homeownership and household crowding. Homeownership is included given its role as a significant socioeconomic milestone in the assimilation process. Respondents are assigned a "1" if they own their homes and a "0" otherwise. Household crowding is included as a measure of whether the respondents are able to attain housing that meets their needs. It is measured as the number of occupants of the household divided by the number of rooms in the home.

In both waves, activity space characteristics are calculated using the addresses of several locations that respondents indicated are important to their lives. Interveiwers asked for the addresses of seven total locations: home, workplaces (respondents may provide addresses for up to two employers), and three other locations: the medical care facility that they go to for emergency care, the medical care facility for routine care, the respondent's church or place of worship, and grocery store. I employed packages for processing geographic information in R 3.4.2 and used the geocoded coordinates of these seven destinations to construct several measures of the characteristics and the composition of the respondents' activity spaces.

I joined the geographic coordinates of each location with the boundaries of the Census block group within which they fall and used the resulting block group identifiers to attach sociodemographic data from 2000 Census, for addresses from Wave 1, and the 2005-2009 American Community Survey (ACS) 5-year estimates for addresses from Wave 2. After categorizing each of the potential seven locations as either home, work, or other, I estimated the average block group characteristics of the locations falling within each of these categories. Specifically, this results in four measures calculated in both Wave 1 and Wave 2: the percent of the residents in the

block group who are non-Hispanic white, Hispanic, and foreign-born and the percent of residents below the poverty line.

Documentation Status, Nativity, and Race/Ethnicity

The LAFANS contains detailed questions regarding immigrants' legal or visa status. First, respondents were asked for their country of birth. If they were born outside of the U.S., they were asked whether or not they are a U.S. citizen. If they do not have citizenship, respondents were asked a follow-up question as to whether they have permanent residence or a green card. If they answer no to this, they are further prompted as to whether they have any document, such as a visa, which would allow them to stay in the U.S. for a limited amount of time and whether this document is currently still valid. I define as undocumented immigrants those who were born outside of the U.S., and do not currently have citizenship, legal permanent residence or a green card, or a valid visa. Anyone who meets these criteria is assigned a "1," and all others are assigned a "0." This method of determining immigrants' status represents one of the techniques found to be most reliable in immigrant surveys (see Bachmeier, Van Hook, and Bean 2014). Non-response to questions about legal status is largely not a concern with the LAFANS and the profile of the unauthorized population estimated from LAFANS is similar to those yielded by other independent estimates of the Los Angeles County population (see Bachmeier, Van Hook, and Bean 2014).

Using variables indicating the respondent's race/ethnicity, I limit my analyses to examining undocumented Latinos, documented Latinos, and native whites. The inclusion of native whites as a reference group is not meant to imply that all Latino immigrants should aspire to the residential patterns and outcomes of the white majority. However, theories of residential attainment have long hypothesized a narrowing of differences between immigrants and native-born whites and this is

viewed as both a key facet of incorporation and as a generally positive outcome for society as a whole. Furthermore, given the privileged position that whites have long held, any attenuation of these racial/ethnic disparities in locational attainment and spatial integration provides a window into whether immigrants who are racial/ethnic minorities are able achieve a degree of social mobility.

Controls

All analyses include several relevant demographic and socioeconomic controls. I adjust for any differences in activity spaces that may be due to life course factors or gender differences by including respondent age and whether the respondent identifies as female (1=yes). I also account for marital status (married = 1), household composition (1 = at least one child under 18 present in the household), and annual family income (logged) at Wave 1. I include an indicator of whether the respondent moved between waves (1 = moved). Finally, I control for characteristics that may be associated with more frequent reasons to spend time away from home, or facilitate non-home activities. These include employment status (employed=1), and whether the family owns a personal vehicle (1 = yes). Controlling for vehicle access is particularly important given that the geographic area covered by one's activity space often depends on access to a personal vehicle or the availability of public transport options (Jones and Pebley 2014). Families who lack access to a vehicle may travel fewer miles to routine activity locations, or visit fewer locations.

Analytic Strategy

I employ OLS regression methods in order to model the change over time in each dependent variable. In all models I cluster standard errors to account non-independence of observations within individuals. The results of yielded by this

approach mirror that of one in which a fixed-effect for individuals is included. In each model, the groups being evaluated are distinguished by a treatment status defined as *Immigrant* = 0 for the native-born group and *Immigrant* = 1 for the (documented or undocumented) immigrant group being evaluated in a given model. Individuals are observed in two time periods, where *wave* = 0 indicates Wave 1 and *wave* = 1 indicates Wave 2. Each outcome, *Yi*, is modeled by:

$$Y_i = \alpha + \beta Immigrant_i + \gamma\ wave_i + \delta Immigrant_i \text{ x } wave_i + \varepsilon_i$$

This simple approach is extremely useful for my purposes in that the terms included in the model directly correspond to my hypotheses. For instance, β represents the immigrant group specific effect, or the differences between the immigrant and native-born groups. In other words, β can be interpreted as the initial disparity in a given outcome between either undocumented or documented immigrants and the native-born reference group. The term γ is an estimate of the time trend that is common to both the native-born and immigrant groups. The term associated with the interaction of *immigrant* and *wave*, δ, is calculated as the pre-post difference in the average outcome in the immigrant group minus the pre-post difference in the average outcome in the native-born group. To put it more simply, this captures whether the time effect differs between the immigrant and native-born groups. In my analyses, δ can be interpreted as representing whether the disparity in a given outcome between the immigrant group being evaluated and native reference group widens, if the term is positive, or narrows, if the term is negative, over time.

This approach adjusts for baseline systematic differences between the immigrant and native-born groups at the beginning of the period of observation (captured in the term β). Other time trends, anything associated with the time of year,

economic cycle, or any event affecting the entire country, state or county that may have influenced trends in residential attainment or activity space characteristics during the relevant time period should netted by this approach.

I estimate three series of models for each of the outcomes. In the first series, I first estimate models comparing each outcome between undocumented immigrants and native-born whites. I next estimate the same models, but adjust the treatment in order to compare documented immigrants and native-born whites. The third, and final, series of models compares the outcomes of undocumented immigrants to those of documented immigrants.

In order to further account for potential changes in the demographic or socioeconomic composition of the groups, all models account for the demographic and socioeconomic controls detailed earlier. The final immigrant-only models also include controls for immigration-related characteristics, namely the number of years the respondent has resided in the U.S. and whether the interview was conducted in Spanish or English (included as a proxy for English language ability).

Results

Figure 1 presents differences in the means of each outcome for undocumented and documented immigrants relative to native-born whites. This figure highlights the disparities in these outcomes in each wave. Undocumented immigrants are less likely to be homeowners. They also live, and spend time, in areas with a higher percent of poverty than either of the other groups. While Figure 1 provides some useful insights into the differences between these groups, the true nature of the disparities is better ascertained with the regression results.

Table 1 contains the results from the regression models on residential attainment and activity space composition of undocumented immigrants and

documented immigrants, both relative to native-born whites. The results associated with each dependent variable are adjusted for demographic and socioeconomic characteristics. In Table 2, the coefficient associated with immigrant status represents the initial or Wave 1 disparity between a given immigrant group and native-born whites. This corresponds directly with Hypotheses 1a and 1b; testing the expectation that both undocumented immigrants and documented immigrants will tend to initially have lower residential attainment than native-born whites, and have activity spaces characterized by a higher share of Hispanic and foreign-born residents and residents with incomes below the poverty line. I begin by examining gaps between documented and undocumented immigrants in traditional measures of spatial assimilation; then I consider whether the characteristics of their activity spaces are indicative of other assimilation in the spaces of daily activities.

Spatial Assimilation in Residential Context

As of Wave 1, undocumented immigrants are less likely to be homeowners than native-born whites (b = -0.477, $p < 0.000$). Undocumented immigrants live in households characterized by more household crowding (b = 0.782, $p < 0.000$). Documented immigrants are also initially less likely to be homeowners and experience more household crowding than native whites (b = -0.252, $p < 0.000$; b = 0.412, $p < 0.000$ respectively).

In Table 2, the coefficients associated with the time variable or survey wave indicate a general time trend that is common among both groups, however the results associated with the interaction between immigrant status and survey wave are of more interest. These coefficients, which correspond with Hypothesis 2a and Hypothesis 2b, represent the degree to which the time trend is different for immigrants, or whether the initial gaps are narrowing over time, as would be typically expected in assimilation

theory. As it pertains to homeownership and household crowding, I find no significant evidence that the initial disparities I observe are reduced over time.

Turning attention to residential neighborhood characteristics, I find that undocumented immigrants initially reside in block groups with a lower share of non-Hispanic white residents (b = -34.801, $p < 0.000$), a higher share of Hispanic residents (b = -35.753, $p < 0.000$), a higher share of foreign-born residents (b = 17.317, $p < 0.000$), and a higher share of residents below the poverty line (b = 18.130, $p < 0.000$) compared to native whites. In regard to the characteristics of residential neighborhoods, the only evidence of a narrowing gap between undocumented immigrants and native-born whites is associated with the share of immigrants present. Over time, the difference in block group percent immigrant between undocumented immigrants and native whites is, on average, reduced (b = -4.472, $p < 0.05$).

Documented immigrants, compared to native whites, also initially reside in neighborhoods that have fewer white residents. The home neighborhoods of documented immigrants are also characterized by a higher percent Hispanic, immigrant, and have a higher percent poverty than native whites. However, in contrast with the results for undocumented immigrants, I find evidence of a reduction in the size of each of these disparities over time. For example, percent White increases by about 6% ($p<0.01$) and percent Hispanic decreases by approximately 5% ($p<0.05$), percent immigrant decreases by 6% ($p < 0.001$), and percent poverty decreases by 5% ($p <0.001$). These results provide some support for my hypotheses. More specifically, they indicate that with the passage of time documented immigrants experience a degree of residential integration and that a similar attenuation of differences does not occur to the same degree among those who are undocumented.

Finally, in Table 2 I present the results from regression models comparing the time trends for undocumented immigrants relative to documented immigrants in the

outcomes of interest. In contrast to the previous series of models, these results do not attempt to represent the assimilation relative to a native-born groups. Instead they demonstrate whether there are initial differences between undocumented immigrants and documented immigrants and whether these differences are maintained over time.

I find fewer significant differences between undocumented immigrants and documented immigrants and less support for Hypothesis 3 than I found from my previous hypotheses. Undocumented immigrants are less likely to be homeowners than documented immigrants (b = -0.287, $p < 0.000$) and they experience more household crowding (b = 0.335, $p < 0.01$). The household crowding of undocumented immigrants increases over time, resulting in a slight widening of the initial observed disparity (b = 0.284, $p < 0.05$). In addition, I find that undocumented immigrants live in neighborhoods with significantly higher poverty than documented immigrants and this disparity does not narrow over time (b = 5.504, $p < 0.000$).

Spatial Assimilation in Activity Spaces

I find fewer significant differences in workplace block group composition between undocumented immigrants and native-born whites. However, the results do indicate that undocumented immigrants work in neighborhoods that are less white (b = -19.454 $p < 0.000$) and more Hispanic (b = 22.900, $p < 0.000$) than the workplace locations of native whites. Importantly, undocumented immigrants also work in areas characterized by more poverty (b = 11.153, $p < 0.000$). These differences are not attenuated over time.

Similarly, documented immigrants tend work in neighborhoods with a lower share of white residents (b = -25.942, $p < 0.000$). Their workplaces, on average, are located in areas with a higher share of Hispanic (b = 29.765, $p < 0.000$) and immigrant residents (b = 11.194, $p < 0.000$). While these differences are significantly different at

time 1, over time these differences do not appear to significantly narrow. I do not find evidence of an initial disparity in workplace percent poverty between documented immigrants and native whites.

In contrast to the neighborhoods where they work, I find larger disparities between undocumented immigrants and whites in the locations of their other activities. For routine activities such as grocery shopping, attending places of worship, undocumented immigrants compared to native whites travel to areas that have a lower share of white residents ($b = 17.317$, $p < 0.000$), a higher share of Hispanic residents ($b = 17.317$, $p < 0.000$), and more immigrants ($b = 17.317$, $p < 0.000$). In fact, routine activities of undocumented immigrants take place in neighborhoods that have poverty rates that are an estimated 10.9-percent higher than that of native whites ($p < 0.000$). Similar to the trend observed in their residential neighborhoods, the initial differences in the block group percent immigrant of these other locations is also somewhat reduced over time ($b = -6.358$; $p < 0.01$).

Echoing the results associated with the characteristics of undocumented immigrants' residential neighborhoods, I find initial disparities between documented immigrants and native whites in regard to the composition of the neighborhoods that they visit neighborhoods during the course of their other routine activities. Documented immigrants tend to spend time in areas with higher percentages of Hispanic residents ($b = 38.385$, $p < 0.000$) and these differences do not appear to significantly change with the passage of time. But I find evidence that other differences between documented immigrants' and native whites' activity spaces are reduced over time. More specifically, the initial differences in the percent white ($b = -35.322$, $p < 0.000$), percent immigrant ($b = 16.792$, $p < 0.000$), and percent poverty ($b = 8.414$, $p < 0.000$) of the neighborhoods where other destinations are located narrow over time. This provides some evidence that the activity patterns of documented

immigrants become more integrated over time; that is, they come to more closely resemble those of native-born individuals.

Results in Table 3 further demonstrate the degree to which undocumented immigrants' activity spaces are characterized by socioeconomic disadvantage. While I do not find an initial significant difference between undocumented immigrants and documented immigrants in regard to the percent poverty of the neighborhoods they visit during the course of routine activities, I do find that this difference widens over time. Documented immigrants experience a reduction over time in the average percent poverty of the neighborhoods where these destinations are located (b = -4.209, $p <$ 0.000), however this reduction is offset for undocumented immigrants (b = 5.042, $p <$ 0.000).

Discussion

Assimilation theory often hypothesizes a narrowing of the differences between immigrants and native-born groups as immigrants reside in the U.S. for longer (see Massey 1984). However, assimilation, particularly spatial assimilation may be stalled or slowed for undocumented immigrants. Previous research has shown that lacking legal authorization to live in or work in the U.S. deeply impacts the prospects of undocumented immigrants, resulting in profound consequences for the types of housing and neighborhoods they have preferences for and access to (Hall and Greenman 2013). Data constraints have often limited researchers' ability to investigate many aspects of the assimilation process as they pertain to undocumented immigrants. Furthermore, spatial assimilation involves more than residential attainment. Considering the characteristics of the locations of immigrants' routine destinations provides insight into a form of assimilation that is often overlooked and is perhaps easier to change than one's home neighborhood. Incorporating activity spaces into

assimilation research in this way provides understanding of the broader spatial integration immigrants are able to attain, the potential for between-group contact offered by their routine activity patterns, and the degree to which they are exposed to poverty and disadvantage during the course of daily life.

Using longitudinal data on adults from Los Angeles County, I assessed whether disparities between undocumented immigrants and native-born whites are more persistent or narrow more slowly than the differences between documented immigrants and native-born whites. My findings clearly show that undocumented immigrants are less likely to be homeowners, and that they experience more household crowding, compared to both documented immigrants and native whites. These disparities are not reduced over time, and in some cases they even widen. Undocumented immigrants' places of residence are also located in areas characterized by a higher share of poverty than other groups – and these disparities persist over time.

Undocumented immigrants' slower transition to homeownership and consistent exposure to poverty at home and in other locations implies a slowed or blocked path to assimilation compared to documented immigrants. This may stem from a number of factors. Undocumented immigrants, as a result of being less likely to be homeowners, may be less able to accrue wealth and improve their socioeconomic standing. Exposure to poverty in both their residential neighborhoods and other locations likely impacts both their economic wellbeing and their health (see Browning and Cagney 2002). Importantly, the disparities in the share of poverty present in the non-residential locations they routinely visit may limit the types of institutions or resources they have access to. Furthermore, time spent in poor neighborhoods may heighten the fear or worry that undocumented immigrants feel when they enter higher income neighborhoods. The fear, anxiety, and stigma surrounding associated with being

undocumented (Abreggo 2011) may not diminish with the passage of time, thus resulting in stalled spatial integration into higher income neighborhoods.

I also find evidence that there are fewer differences between documented immigrants and undocumented immigrants in regard to the racial/ethnic composition of their home neighborhoods and activity spaces. However, echoing standard measures of assimilation, I find disparities in household crowding, block group percent immigrant, percent White, and percent poverty between undocumented immigrants and whites. Importantly, these disparities persist over time. Furthermore, even routine activity patterns, over which individuals likely are able to exercise a higher degree of autonomy and should therefore likely be easier to change than one's place of residence, also do not narrow over time. For documented immigrants, differences in the composition of the areas surrounding their routine activity destinations are decreased over time. These results provide some evidence that documented immigrants are able to follow the typically hypothesized path towards spatial assimilation.

It should be noted that while differences between documented immigrants and native-born whites in regard to characteristics of their home neighborhoods and locations of their routine activities are reduced over time, the differences in workplace neighborhood composition remain relatively stable. Over time, the workplace neighborhoods of documented Latino immigrants are less white and have a higher percentage of immigrant residents. Furthermore, even though differences in home neighborhood percent Hispanic between documented immigrants and whites is reduced over time, the other locations that members of this group routinely visit remain in areas with higher shares of Hispanic residents. These findings highlight the ways in which activity space assimilation may depart from residential assimilation, underscoring that activity spaces do not always reflect the composition or

characteristics of one's residential neighborhood (see Pebley and Jones 2014) and that taking into account activity spaces is crucial for understanding immigrants' broader spatial incorporation.

These results come with a few limitations. First, while this method of inferring legal status based on self-reported citizenship and visa status is generally accepted, it is not without its drawbacks. Some individuals may be hesitant to discuss their legal status with an in-person interviewer. However, past research using the LAFANS has found that such a cooling effect on self-report of documentation is rare. Even if some immigrants incorrectly identify as documented, it would likely mean that the results I present here are conservative estimates of the differences between undocumented and documented immigrants.

Second, the LAFANS does not capture immigrants immediately after entry. Comparing how activity space characteristics change over time following entry would be informative of spatial integration, and how assimilation processes differ over time for undocumented and documented immigrants. However, the two waves of the LAFANS are collected approximately 8 years apart. This provides a wide time window in which I am able to observe changes in immigrants' routine activity patterns and residential outcomes. Third, I measure activity spaces using the provided addresses of destinations that are important to the daily lives of respondents. This represents an innovation on typical approaches that often only provide information on where an individual resides. However, this approach does not capture the full range of possible locations individuals spend time in throughout the day. Recent approaches have begun employing smartphone GPS tracking to better understand the full scale and range of activities and such an approach promise to result in enriching insights for activity research and research on places effects.

Overall, my findings provide some support for the idea that undocumented status may hamper immigrants' ability to experience spatial integration over time, resulting in a form of social isolation that may compound the many other barriers and disadvantages they already face. This topic is important not just because of the sheer size of the unauthorized population and the significant share of the American workforce they account for, but also because of their contribution to and place in America's economic, cultural, social, and political future (see Greico 2010). The assimilation and ultimate incorporation of immigrants is often considered a net positive for the country as a whole. The process of assimilation may be altered or stalled altogether for immigrants who lack documentation, with undocumented being more disadvantaged, more segregated, and more socially isolated than any other group.

Figure 1. Average differences in homeownership, household crowding, and activity space characteristics across survey waves for undocumented and documented immigrants relative to native-born whites

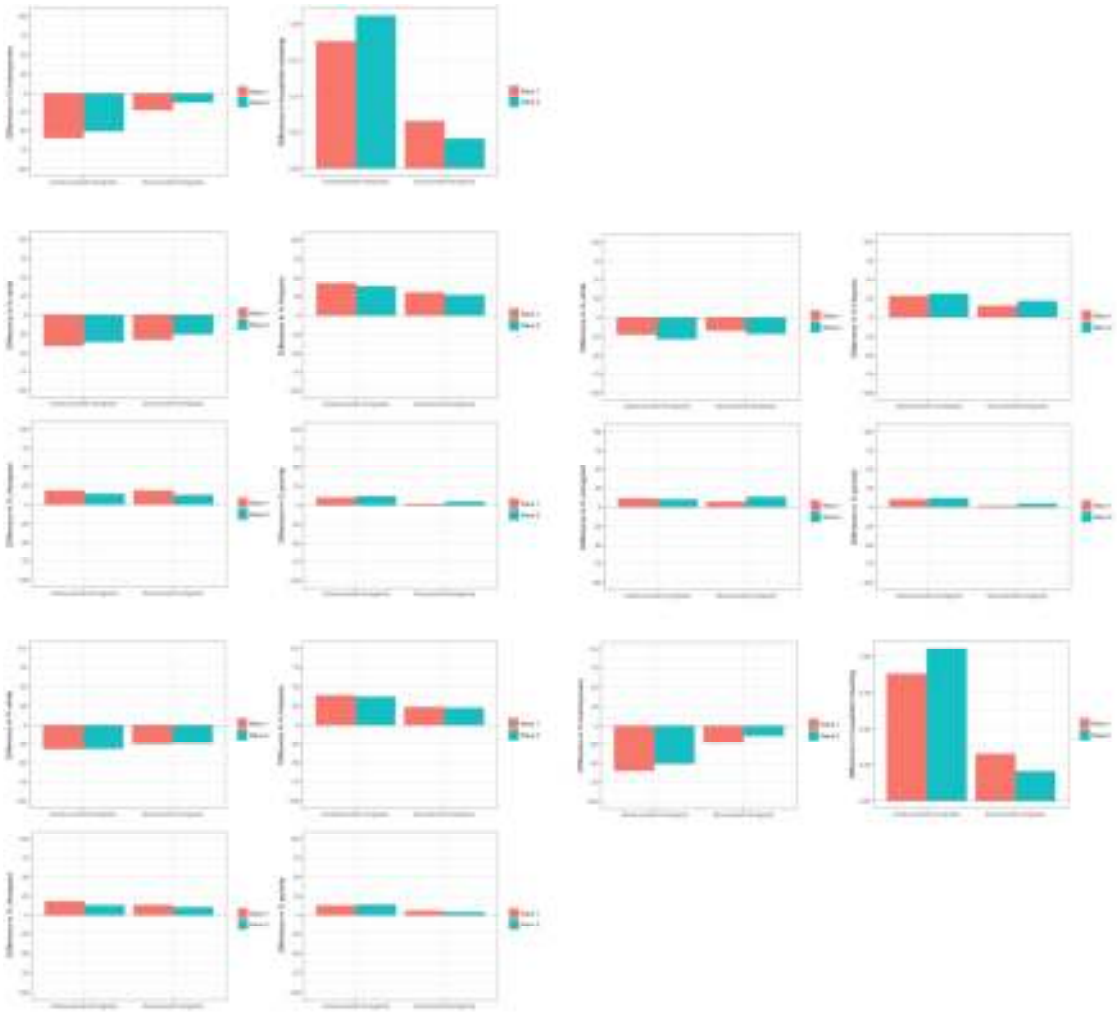


Table 1. Regression results for the residential attainment and activity space composition of Latino immigrants relative to native-born Whites in L.A. County

	Undocumented immigrants			Documented immigrants		
Dependent variable	Immigrant Status	Survey wave	Immigrant Status X Survey wave	Immigrant Status	Survey wave	Immigrant Status X Survey wave
Residential attainment						
Homeownership	-0.477 ***	-0.001	0.109	-0.252 ***	-0.001	0.083
	(0.077)	(0.045	(0.083)	(0.067)	(0.045)	(0.058)
Household crowding	0.782 ***	0.108 ***	0.195	0.412 ***	0.108 ***	-0.089
	(0.116)	(0.032)	(0.144)	(0.046)	(0.032)	(0.046)
Residential neighborhood characteristics						
Block group %non-Hispanic White	-34.801 ***	-6.441 ***	4.329	-40.882 ***	-6.579 ***	6.632 **
	(6.683)	(1.839)	(3.116)	(2.892)	(1.838)	(2.066)
Block group %Hispanic	35.753 ***	5.177 ***	-3.498	46.462 ***	5.396 ***	-5.413 *
	(5.633)	(1.530)	(4.005)	(3.327)	(1.543)	(2.308)
Block group %immigrant	17.317 ***	0.249	-4.872 *	23.151 ***	0.279	-6.254 ***
	(4.096)	(0.917)	(2.322)	(1.905)	(0.969)	(1.413)
Block group %poverty	18.130 ***	-0.151	-3.329	12.930 ***	-0.150	-5.126 ***
	(1.826)	(0.942)	(3.129)	(1.197)	(0.944)	(1.364)
Workplace block group characteristics						
Block group %non-Hispanic White	-19.454 **	1.703	-6.892	-25.942 ***	1.749	-1.228
	(6.402)	(3.965)	(7.082)	(4.014)	(3.927)	(5.259)
Block group %Hispanic	22.900 ***	2.557	3.050	29.765 ***	2.513	0.424
	(6.320)	(3.395)	(6.466)	(4.432)	(3.382)	(5.236)
Block group %immigrant	7.817	-3.475	-0.859	11.194 ***	-3.117	2.153
	(4.210)	(2.110)	(4.714)	(2.479)	(2.087)	(3.251)
Block group %poverty	11.153 *	-3.188	-0.813	4.702	-3.534	0.554
	(4.364)	(2.708)	(5.184)	(2.482)	(2.696)	(3.314)
Other frequent activity location block group characteristics						
Block group %non-Hispanic White	-33.554 ***	-5.708 **	4.575	-35.322 ***	-5.782 **	4.731 *
	(3.856)	(1.751)	(2.516)	(2.507)	(1.758)	(2.056)
Block group %Hispanic	35.776 ***	6.335 ***	-1.237	38.185 ***	6.367 ***	-3.165
	(4.616)	(1.685)	(3.535)	(2.911)	(1.689)	(2.149)
Block group %immigrant	17.950 ***	1.241	-6.358 **	16.792 ***	1.257	-4.404 **
	(1.865)	(1.122)	(2.346)	(1.348)	(1.124)	(1.538)
Block group %poverty	10.904 ***	-1.399	2.207	8.414 ***	-1.384	-2.833 *
	(2.310)	(1.125)	(2.357)	(1.249)	(1.127)	(1.420)
Number of person-years		776			1,057	

Note: Other locations include grocery stores, places of worship, and health care facilities
Estimates presented are survey-adjusted for the probability of selection and the sampling design
+ p < 0.1; * p < 0.05; ** p < 0.01; *** p < 0.001

Table 2. Regression results for the residential attainment and activity space composition of undocumented Latino immigrants relative to documented Latino immigrants in L.A. County

Dependent variable	Undocumented	Survey wave	Undocumented X Survey wave
Residential attainment			
Homeownership	-0.287 ****	0.082 *	0.024
	(0.067)	(0.037)	(0.079)
Household crowding	0.335 **	0.019	0.284 *
	(0.110)	(0.033)	(0.144)
Residential neighborhood characteristics			
Block group % non-Hispanic White	1.701	0.122	-2.427
	(2.698)	(0.903)	(2.671)
Block group % Hispanic	-3.359	-0.108	1.583
	(4.184)	(1.690)	(4.086)
Block group % immigrant	-2.539	-5.993 ***	1.353
	(3.280)	(1.054)	(2.392)
Block group % poverty	5.504 ***	-5.275 ***	1.794
	(1.656)	(0.985)	(3.146)
Workplace block group characteristics			
Distance between from home and workplace (in miles; logged)	-0.322	-0.642 ***	0.418
	(0.415)	(0.175)	(0.426)
Block group % non-Hispanic White	0.096	0.111	-2.174
	(5.586)	(3.691)	(6.627)
Block group % Hispanic	4.931	2.765	-0.402
	(5.925)	(4.380)	(6.994)
Block group % immigrant	-0.795	-1.333	-2.385
	(3.930)	(2.652)	(4.775)
Block group % poverty	5.976	-2.261	-1.438
	(3.799)	(2.086)	(4.839)
Other frequent activity location block group characteristics			
Avg. distance between home and other locations (in miles; logged)	-0.189	-0.074	0.061
	(0.150)	(0.092)	(0.169)
Block group % non-Hispanic White	-1.418	-1.007	-0.199
	(2.145)	(1.067)	(2.108)
Block group % Hispanic	1.971	3.207 *	1.980
	(3.906)	(1.324)	(3.393)
Block group % immigrant	2.067	-3.159 **	-1.929
	(1.464)	(1.050)	(2.289)
Block group % poverty	1.929	-4.209 ***	5.042 *
	(1.997)	(0.867)	(2.236)
Number of person-years		892	

Note: Other locations include grocery stores, places of worship, and health care facilities

Estimates presented are survey-adjusted for the probability of selection and the sampling design

+ $p < 0.1$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

REFERENCES

Alba, Richard D., Logan, John R., 1991. "Variations on two themes: racial and ethnic patterns in the attainment of suburban residence." *Demography* 28 (3), 431–453.

Amuedo-Dorantes, Catalina, Bansak, Cynthia, 2006. "Money transfers among banked and unbanked Mexican immigrants." *Southern Economic Journal*, 374–401.

Bair, Sheila C.2003. "Improving Access to the US Banking System among Recent Latin American Immigrants." *Center for Public Policy and Administration.*

Brayne, S. 2014. "Surveillance and System Avoidance: Criminal Justice Contact and Institutional Attachment." *American Sociological Review* 79(3):367–91.

Browning, Christopher R., Brian Soller, and Aubrey L. Jackson. 2014. "Neighborhoods and Adolescent Health-Risk Behavior: An Ecological Network Approach." *Social science & medicine (1982)* 125:1–10.

Browning, Christopher R., Kathleen A. Cagney, and James Iveniuk. 2012. "Neighborhood Stressors and Cardiovascular Health: Crime and C-Reactive Protein in Dallas, USA." *Social Science and Medicine* 75(7):1271–79.

Cagney, Kathleen A. and Erin York Cornwell. 2010. "Neighborhoods and Health in Later Life : The Intersection of Biology and Community." *Annual Review of Gerontology and Geriatrics.*

Cavazos-Rehg, P. A., Zayas, L.H., & Spitznagel, E. L. (2007). Legal status, emotional wellbeing and subjective health status of Latino immigrants. Journal of the National Medical Association, 99(10), 1126–1131

Chavez, L. (1998). Shadowed lives: Undocumented immigrants in American society (2nd Ed.). Fort Worth, TX: Harcourt, Brace, Jovanovich College Publishers.

Cornelius WA, Chavez LR, Jones OW. Mexican Immigration and Access to Health Care. LaJolla, Calif: Center for US-Mexican Studies, UCSD; 1984

Donato, Katharine M., Massey, Douglas S., 1993. "Effect of the immigration reform and control act on the wages of Mexican migrants." *Social Science Quarterly* 74, 523–541

Flippen, Chenoa, 2012. "Laboring underground: the employment patterns of Hispanic immigrant Men in Durham, NC." *Social Problems* 59 (1), 21–42.

Galster, George and Erin Godfrey. 2005. "By Words and Deeds: Racial Steering by Real Estate Agents in the U.S. in 2000." *Journal of the American Planning Association* 71(3):251–68.

Goldman, Dana P., James P. Smith, and Neeraj Sood. 2006. "Immigrants and the Cost of Medical Care." *Health Affairs* 25(6):1700–1711.

Greenman, Emily, Hall, Matthew, 2013. "Legal status and educational transitions for Mexican and Central American immigrant youth." *Social Forces* 91 (4), 1475–1498.

Grieco, Elizabeth M; Yesenia D. Acosta, G. Patricia de la Cruz, Christine Gambino, Thomas Gryn, Luke J. Larsen, Edward N. Trevelyan, and Nathan P. Walters. 2012. "The Foreign-Born Population in the United States: 2010." *American Community Survey Reports.*

Hall, Matthew and Emily Greenman. 2013. "Housing and Neighborhood Quality among Undocumented Mexican and Central American Immigrants." *Social Science Research* 42(6):1712–25.

Hall, Matthew and Jonathan Stringfield. 2014. "Undocumented Migration and the Residential Segregation of Mexicans in New Destinations." *Social Science Research* 47: 61-78

Hall, Matthew, Greenman, Emily, Farkas, George, 2010. "Legal status and wage disparities for Mexican immigrants." *Social Forces* 89 (2), 491–513.

Hipp, John R. 2010. "Resident Perceptions of Crime and Disorder: How Much is 'Bias', and How Much Is Social Environment Differences?" *Criminology* 48(2):475–508.

Huckfeldt, Robert R. 1983. "Social Contexts, Social Networks, and Urban Neighborhoods: Environmental Constraints on Friendship Choice." *American Journal of Sociology* 89(3):651–69.

Iceland, John and Melissa Scopilliti. 2008. "Immigrant Residential Segregation in U.S. Metropolitan Areas, 1990-2000." *Demography* 45(1):79–94.

Jones, Malia and Anne R. Pebley. 2014. "Redefining Neighborhoods Using Common Destinations: Social Characteristics of Activity Spaces and Home Census Tracts Compared." *Demography* 51(3):727–52.

Krogstad, Jens Manuel; Jeffrey Passel and D'Vera Cohn. 2017. "5 Facts About Illegal Immigration in the U.S." *Pew Research Center*.

Massey, Douglas S., 1987. "Do undocumented migrants earn lower wages than legal immigrants?" *International Migration Review* 21, 236–274.

Massey, Douglas S., Akresh, Ilana Redstone, 2006. "Immigrant intentions and mobility in a global economy: the attitudes and behavior of recently arrived U.S. immigrants." *Social Science Quarterly* 87 (5), 954–971.

Massey, Douglas S., Denton, Nancy A., 1993. *American Apartheid: Segregation and the Making of the Underclass.* Harvard University Press.

Massey, Douglas. 1981. "Dimensions of the New Immigration to the United States and the Prospects for Assimilation." *Annual Review of Sociology* 7: 57-85.

Matthews, Stephen A. 2011. “Spatial Polygamy and the Heterogeneity of Place: Studying People and Place via Egocentric Methods.” Pp. 127–43 in *Communities, Neighborhoods, and Health*.

Matthews, Stephen A. and Tse-Chuan Yang. 2013. “Spatial Polygamy and Contextual Exposures (SPACEs).” *American Behavioral Scientist* 57(8):1057–81.

Peterson, R. D., & Krivo, L. J. 2010. *Divergent Social Worlds: Neighborhood Crime and the Racial-Spatial Divide*. New York, NY: Russel Sage Foundation.

Piore, M. J. 1979. *Birds of Passage: Migrant Labor and Industrial Societies*. NY: Cambridge U. Press.

Qian, Zhenchao; Daniel Lichter. 2007. “Social Boundaries and Marital Assimilation: Interpreting Trends in Racial and Ethnic Intermarriage.” *American Sociological Review* 72(1): 68-94.

Sampson, Robert J., Jeffrey D. Morenoff, and Felton Earls. 1999. “Beyond Social Capital: Spatial Dynamics of Collective Efficacy for Children.” *American Sociological Review* 64(5):633–60.

Sastry, Narayan, Ann Pebley and Zonta M. 2002. “Neighborhood definitions and the spatial dimension of daily life in Los Angeles (CCPR Working Paper 033-04).” Los Angeles: California Center for Population Research, University of California–Los Angeles.

Sharp, Gregory, Justin T. Denney, and Rachel T. Kimbro. 2015. “Multiple Contexts of Exposure: Activity Spaces, Residential Neighborhoods, and Self-Rated Health.” *Social Science and Medicine* 146:204–13.

South, Scott J., Kyle Crowder, and Erick Chavez. 2005. “Geographic Mobility and Spatial Assimilation among U.S. Latino Immigrants.” *International Migration Review* 39(3):577–607.

Suro, Roberto, Bendixen, Sergio, Lowell, B. Lindsa, Benavides, Dulce C., 2002. Billions in Motion: Latino Immigrants, Remittances, and Banking. Report of Pew Hispanic Center and Multilateral Investment Fund.

Suro, Roberto, Bendixen, Sergio, Lowell, B. Lindsa, Benavides, Dulce C., 2002. "Billions in Motion: Latino Immigrants, Remittances, and Banking." *Report of Pew Hispanic Center and Multilateral Investment Fund.*

Vallee, J., Cadot, E., Grillo, F., Parizot, I., & Chauvin, P. 2010. "The combined effects of activity space and neighbourhood of residence on participation in preventive health-care activities: The case of cervical screening in the Paris metropolitan area (France)." *Health & Place,* 16, 838–852.

Vega, W. A., Sribney, W. M., Aguilar-Axiola, S., & Kolody, B. 2004. "12-month prevalence of DSM-III-R psychiatric disorders among Mexican Americans: Nativity, social assimilation, and age determinants." *Journal of Nervous and Mental Disease*, 192(8), 532–541.

Willen, S. S. 2007. "Toward a critical phenomenology of "illegality": State power, criminality and abjectivity among undocumented migrant workers in Tel Aviv, Israel." *International Migration*, 45(3), 8-38.

Wodtke, G. T., D. J. Harding, and F. Elwert. 2011. "Neighborhood Effects in Temporal Perspective: The Impact of Long-Term Exposure to Concentrated Disadvantage on High School Graduation." *American Sociological Review* 76(5):713–36.

Yinger, John, 1997. Closed Doors, *Opportunities Lost: The Continuing Costs of Housing Discrimination.* Russell Sage Foundation.

York Cornwell, Erin; Kathleen A. Cagney. 2017. "Aging in Activity Space: Results From Smartphone-Based GPS-Tracking of Urban Seniors." *Journal of Gerontology: Social Sciences* 00 (00): 1-12.

Yu, Zhou and Dowell Myers. 2007. “Convergence or Divergence in Los Angeles: Three Distinctive Ethnic Patterns of Immigrant Residential Assimilation.” *Social Science Research* 36(1):254–85.

CHAPTER 3

PLACE-BASED STRESSORS AND CARDIOVASCULAR HEALTH: EXPOSURE TO VIOLENT CRIME AND C-REACTIVE PROTEIN AMONG ADULTS IN LOS ANGELES COUNTY

Abstract

Exposure to crime, particularly violent crime, is stressful and can have far-reaching implications for health. Previous studies provide evidence that neighborhood-based exposure to violent crime is connected to the production of C-reactive protein (CRP), a key indicator of inflammation-related cardiovascular risk. The relationship between place-based exposure to violence in other frequently visited destinations and CRP remains underexplored. Using data from Wave 2 of the Los Angeles Family and Neighborhood Study (LAFANS) and a large, publicly available database of crime incidents in L.A. County, I examine whether occurrences of violent crime near respondents' homes, workplaces, places of worship, grocery stores, and healthcare providers are related to elevated CRP levels. Results indicate that living in neighborhoods where violent crime is associated with higher CRP levels. Violent crime that occurs near frequent non-residential destinations is also positively related to CRP, particularly if violent crimes occurred repeatedly throughout the year, and adults who are exposed to violence both around their homes and in other contexts have significant elevations in CRP. These findings shed light on the health impact of regular, repeated proximity to crime and how residential and non-residential exposures combine to take a toll on cardiovascular health. Exposure to crime that occurs frequently and occurs in all or most contexts in which one spends time may play a role in shaping disparities in other health outcomes.

Introduction

Rates of violent crime in the US have been steadily declining since their peak in 1991. As of 2015, these rates fell to the lowest levels recorded during the last five decades (Sharkey 2018). Despite these declines, there remain large variations across regions, cities, and neighborhoods in how frequently violence occurs. For example, the Pacific Palisades neighborhood in Los Angeles County recorded a per capita violent crime rate of 3.9 incidents per 10,000 people over the final six months of 2017, while the rate in the neighborhood of Chesterfield Square, approximately 17 miles away, was 197.4 during the same time period. The result is that, for some, violent crime occurs with painful regularity in their home neighborhoods.

While personal experiences with criminal victimization have deleterious effects on health (Abada 2008; Britt 2001; Koss 2001), even ambient or neighborhood-based exposure to violent crime is associated with poorer self-rated health, psychological distress, higher rates of major depression, increased concern for personal safety, and more feelings of fear and anxiety (Ross 1993; Richardson 2017; Kilpatrick et al. 1985; Barbarin 2001). Conducting daily life in environments characterized by violence, whether witnessed in person or learned of from other sources, is stressful and has important implications for cardiovascular health in particular. Specifically, previous studies find that stress, depression, and other negative emotions are connected to the production of C-reactive protein (CRP), an indicator of systemic inflammation and a reliable predictor of future cardiac events (Segerstrom 2004; McDade, Lindau, and Wroblewski 2010).

To the degree that regular and consistent proximity to crime is associated with elevated CRP levels, living in a high-crime neighborhood may impose a heavy cumulative toll on cardiovascular wellbeing. However, residential neighborhoods may

not be the only context in which individuals regularly spend time where violent crime occurs. Daily activities frequently take individuals beyond the boundaries of their neighborhoods (see Sastry et al. 2003; Mathews 2011) and crime may also occur near the location of frequently visited locations, such as workplaces, grocery stores, or places of worship.

Violent crime that occurs near one's frequently visited destinations may exacerbate the impact of residential exposures. Individuals whose daily activity patterns may be characterized by consistent exposure to high-crime environments may feel the need to be consistently alert, on-guard, or experience a more generally-heightened state of anxiety, stress, and fear. Conversely, non-residential exposure on its own may not have the same health impacts as residential-based exposures. Activity patterns may be altered or adjusted more easily than place of residence, and crime occurring in the neighborhood where one works may feel less personally threatening than crimes near where one sleeps.

In this paper I use innovative, restricted-access data from Wave 2 of the Los Angeles Family and Neighborhood Study (LAFANS) to study the relationship between C-reactive protein and exposure to high-crime areas. Specifically, I evaluate the number of violent crime incidents that occurred in close geographic proximity to respondents' important routine activity destinations —home, work, grocery stores, places of worship, or medical care facilities— during the last year. I examine whether non-residential exposure to violence is linked to CRP and whether the relationship is stronger if violent crime occurred consistently near these locations over the past year. I also examine whether elevated CRP levels are most likely if an individual is exposed to crime in both residential and non-residential contexts.

Neighborhood Stressors and C-reactive Protein

C-reactive protein (CRP) is an acute phase protein and a marker of systemic inflammation (see McDade et al. 2010; Kiecolt-Glaser 2003; Holmes and Marcelli 2012). Sustained inflammation has been shown to be predictive of the development of numerous health problems. Elevated CRP levels are associated with osteoporosis, arthritis, Type 2 diabetes, and certain cancers (Denesh et al. 2000; Pradhan, et al. 2001). CRP is an important indicator of cardiovascular disease and chronically elevated CRP is linked to increased risk of myocardial infarction and stroke (Sakkinen et al. 2002; Ridker et al. 1998). Among older adults, elevations in CRP may lead to functional decline and higher risk of mortality (Jenney et al. 2007).

Elevated CRP levels are commonly understood to be produced by prolonged or repeated exposure to either physical or psychological stressors (McDade et al. 2010). Stressors lead to increases in CRP by affecting immune function and inflammatory processes (Segerstrom 2004). More specifically, acute and chronic stressful experiences, along with depression and other negative emotions, both directly stimulate increased production of pro-inflammatory cytokines and indirectly spur the production of cytokines by increasing risk of infection, prolonging infection, and delaying other healing processes (McDade et al. 2010; Lutgendorf et al. 1999; Owen et al. 2003). Increases in CRP, in turn, are produced by hepatocytes in response to pro-inflammatory cytokines (Kiecolt-Glaser 2003). Inflammatory markers, such as CRP levels, are increasingly recognized as some of the strongest predictors of future cardiovascular events (Ridker et al. 1998).

Importantly, CRP levels are most damaging when elevation is prolonged. Sustained elevations of CRP levels are strongly tied to extended periods of high stress, such as extended sleep deprivation or exhaustion, and sources of chronic stress, such as the responsibilities associated with caregiving (Fuligni et al. 2009; Meier-Ewert et al 2004; Ma et al. 2011). Similarly, the cumulative toll of consistent exposure to

violence over an extended period of time may have a "weathering" effect (see Geronimus 1992; Lu and Halfon 2003), and thereby be associated with the highest elevations of CRP.

There are several pathways whereby place-based exposure to violent crime may be linked with elevated CRP. Elevated CRP levels are often found among those who have had previous traumatic exposure to violence, such as military veterans suffering from post-traumatic stress disorder (PTSD) (Gill et al. 2009). Similarly, neighborhood-based exposure to violence may lead to elevated CRP levels as a direct result of increased feelings of fear, anxiety, and stress.

Neighborhood-based exposure to violence may also be indirectly linked to CRP. High neighborhood crime rates are associated with increased psychological distress, concern about personal safety, and fears surrounding victimization potential (Browning and Cagney 2002; Hipp 2010; Turner 2013). Living in a high crime area is also linked with less frequent engagement in positive health behaviors, such as exercise (Richardson 2017). Fears concerning personal safety may dissuade residents from exercising or engaging in outdoor physical activity (Foster 2016). Exercise has been demonstrated to reduce depression and anxiety, and is thereby negatively associated with CRP levels (Milani et al. 2004; Ford 2002). Additionally, neighborhood-based exposure to violent crime may deter the formation of local friendships, resulting in a lowered sense of local social cohesion, and in lower neighborhood collective efficacy, which is associated with CRP (Cagney and Cornwell 2010).

However, when considering the relationship between place and CRP, studies of both neighborhood effects and activity spaces must both address concerns with selection. Individuals are not randomly assigned to neighborhoods. Instead, neighborhood of residence is driven by a complex mix of people's assets, needs,

preferences, and access. Similarly, demographic characteristics and preferences also contribute to what areas individuals are able to visit or will choose to spend time in. It is also reasonable to assume that individuals' health shapes the number or types of contexts. For example, the health problems associated with prolonged elevated CRP levels may limit the size or extent of an individual's activity space.

It is also important to note that the stress of exposure to contexts where violent crime occurs may be related to the response from local authorities that it elicits. Importantly, most crime data employed in studies such as this one are retrieved from databases or reports maintained by local police departments and represent incidents to which local officers responded. Therefore, it is difficult to separate whether the crime itself induces feelings of stress, or whether stress is associated with the law enforcement response to a given incident. Frequent reports of crime often indicate a heightened police presence in an area. A heightened police presence may be stress-inducing, particularly for disadvantaged or marginalized populations or minority groups with histories of police mistreatment (see Sewell and Jackson 2016).

To date, few studies have directly tested the relationship between neighborhood-based exposure to crime and CRP. The studies that have been completed have generally found evidence of a positive relationship between neighborhood crime rates and CRP levels. A study of adults in Dallas, for example, found that recent spikes in neighborhood burglary rates were associated with elevated CRP among men, but not among women (Browning, Cagney, and Iveniuk 2012). This study introduces important nuance about whether elevated CRP levels are only connected to certain types of neighborhood-based crime exposure, such as burglary, and the degree to which other forms of crime-related activities are related to biological stress responses.

Other studies, while not explicitly focused on crime, have found associations between neighborhood structural conditions, such as neighborhood deprivation and neighborhood safety concerns, and CRP (Naxmi et al. 2010; Pollitt et al 2007; Petersen et al. 2008). Neighborhood-based exposure to crime may be mediating these relationships, and it is thus important to better understand whether spending time in areas where violent crime occurs frequently is indeed connected to CRP.

Activity Spaces

Prior work examining place effects on health in general, and CRP specifically, has often relied solely on measures of the characteristics of residential neighborhoods. Data on activity spaces, or the full range of contexts individuals spend time in during the course of daily life, is less readily available and activity spaces are relatively understudied as a result. Daily destinations, such as workplaces, grocery stores, or places of worship, are often located outside of individual's census tracts (Sastry et al. 2002). For example, adults in Los Angeles County regularly travel an average of 8 miles for activities such as work or grocery shopping (Sastry et al. 2002). The degree to which exposures in residential contexts are meaningful for health outcomes may depend on how much of daily life occurs there. Daily responsibilities often necessitate spending large portions of time outside of the home. Indeed, working adults generally spend the majority of their waking hours beyond the borders of their residential neighborhood (Robinson and Godbey 2010).

Collectively, the full range of spatial contexts individuals spend time in are commonly referred to as "activity spaces" (see Sharp et al. 2015; Browning, Soller, and Jackson 2015; Matthews and Yang 2013) Non-residential activity space contexts often differ in terms of socioeconomic and racial/ethnic composition from individuals' residential neighborhoods (Jones and Pebley 2014) and variation in the characteristics

of activity spaces may be an underexplored contributor to racial/ethnic health disparities and differences in health during later life (see York Cornwell and Cagney 2017). Prior studies provide some evidence that characteristics of activity space do indeed have important implications for health. For example, a study using the LAFANS found that contextual exposure to socioeconomic disadvantage in non-residential settings is associated with a higher likelihood of reporting poor or fair health (Sharp et al. 2015).

Non-residential contexts, violent crime, and CRP

Non-residential exposure to violent crime may be associated with CRP through pathways similar to those discussed above in relation to residential exposure. For example, individuals may be exposed to crime in the neighborhoods surrounding their place of work while commuting to and from work or if they eat meals or socialize with colleagues at nearby bars, restaurants, or coffee shops. The occurrence of nearby violent crime incidents may imbue one's daily commute with more fear, heightened alertness or anxiety, and concern for personal wellbeing. Exercising, walking, or other physical activities in the neighborhood around one's workplace would likely be less appealing in a high crime area. Similarly, crime may elicit stress and other negative emotions and disrupt engagement in health-positive behaviors if it occurs near the sites of other frequent activity destinations. This leads to my first hypothesis:

Hypothesis 1: Violent crime in one's residential neighborhood and non-residential activity space destinations are separately associated with higher CRP.

It is also important to understand the relationship between exposure to crime that occurs frequently and consistently over an extended period of time and CRP.

Even exposure to just one spatially proximate violent crime has consequences for a variety of important outcomes. For example, a study of school-age children in New York City found that children living on blocks where a homicide occurred during the previous week performed worse on subsequent cognitive assessments (Sharkey 2010). CRP elevations are often the most damaging when sustained. Consistent proximity to violent crime over time in the contexts in which one spends time may be more impactful in producing feelings of fear, anxiety, and other negative emotions and thus produce elevated CRP. Taken together, this suggests a hypothesis:

Hypothesis 2: Repeated exposure to crime over the last 12 months is associated with higher CRP levels than a single exposure.

In addition to examining whether non-residential exposure to violent crime is associated with elevated CRP, a principal objective of this study is to explore how exposures in activity spaces combine with or moderate residential exposures. An activity space approach to the examination of the relationship between CRP and violent crime allows for an individual's cumulative exposure to be taken into account, opening up important avenues of inquiry into whether non-residential exposure to violence compounds the effects of crime exposure within one's home neighborhood. Indeed, there is evidence that individuals who reside in disadvantaged neighborhoods, but spend time in more advantaged non-residential places, have better self-rated health than those who spend time in contexts that mirror the disadvantage of their home neighborhood (Inagami, Cohen, and Finch 2007). Therefore, I propose a final hypothesis:

Hypothesis 3: Individuals who are exposed to violent crime in both non-residential and residential settings have higher CRP levels than those exposed in only one context.

Data and Methods

In order to test these hypotheses, I employ restricted-access data from Wave 2 of the Los Angeles Family and Neighborhood Survey (LAFANS), which was collected between 2006-2008. Wave 2 followed up with households who were interviewed for Wave 1 of the LAFANS. Wave 1 of LAFANS, collected in 2000-2002, was based off of a stratified random sample of 65 census tracts in Los Angeles County, California. Among the selected census tracts, neighborhoods with a higher share of residents at or below the poverty line were oversampled (see Sastry et al. 2006; Sastry and Pebley 2003). Adults and children residing in households in these census tracts were randomly selected for interview in Wave 1, and an effort was made to re-interview all Wave 1 households for Wave 2. Additionally, in Wave 2 a new random selection of households who moved into the sampled neighborhoods between 2002 and 2006 were also interviewed. Wave 2 interviews were completed with an overall response rate of 64 percent (Peterson et al., 2011). Interviews were conducted in either English or Spanish and households that were unable to complete an interview in either language were excluded. I restrict my analytic sample to adult respondents.

Approximately 50 percent of eligible LAFANS Wave 2 households (including both panel and new-entrant respondents) were selected at random for the collection of several biomeasures. For those selected, dried blood spot samples (DBS) were collected by technicians who were licensed phlebotomists on a follow-up visit. Of the 508 eligible adults who were randomly selected to provide DBS samples, 365 completed the follow-up appointment (representing a response rate of 72 percent). The

DBS samples were used to assess C-reactive protein levels, along with several other measures. Laboratory results of the LAFANS DBS samples were only recently made available and have not to date been employed in previous studies. For the purposes of this paper, my analytic sample consists of all Wave 2 adult respondents who completed the follow-up appointment and for whom DBS results are available (N = 365).

C-reactive Protein

I employ a plasma equivalent measure (mg/L) of CRP concentration. Consistent with previous research using CRP, I find that the distribution of CRP concentration is extremely right-skewed and therefore it is necessary to take the natural logarithm of the raw score in order to normalize the distribution (see Browning, Cagney, and Iveniuk 2012; McDade et al. 2010). Very high CRP levels are often indicative of other health issues, such as acute infection. I therefore exclude cases with a CRP that is greater than 20 mg/L (see McDade et al., 2006). Excluding these cases leaves me with a total analytic sample of 355 respondents.

Activity Spaces

During the course of the interview, respondents were asked to provide the addresses of several key locations that were important to their lives. From the provided addresses, I considered a total of seven possible destinations: home, workplaces (respondents may provide addresses for up to two employers), medical care facilities that they go to for either emergency or routine care (considered separately), church or place of worship, and grocery store. I rely on the geographic coordinates of these locations in order to construct measures of respondent activity spaces.

Violent Crime

In order to identify the degree to which respondents are exposed to violent crime, I use data made publicly available by Los Angeles County Sheriff's Department. This database is maintained and compiled by the GIS coordinator for Los Angeles County and the Los Angeles County Sheriff's department and contains historical data for each year between 2005 and 2009. While crime incidents are geocoded, the exact locations are slightly adjusted for de-identification purposes. This geographic adjustment is fairly minimal in that it places the locations within the same block as the actual incident, but cannot be used to identify the specific address or building where the crime occurred. For each crime record, the incident date and the category or type of crime are provided.

For the purposes of this paper, I focus on violent crimes. Violence is a powerful stressor, and exposure to violent crime in particular may be particularly meaningful CRP, even when it occurs in non-residential environments. I therefore include only incidents identified as homicide, rape, aggravated assault, or robbery. I used packages for the processing of geographic information available in R 3.4.1 in order to overlay the coordinates of the violent crime incidents and respondents' activity destinations onto a map of LA County. In previous studies, census tract boundaries have been the most commonly utilized proxies for residential neighborhoods. However, census tracts vary in size and relying on tracts may mean disregarding crime incidents that occurred geographically proximate to a respondent but which fall beyond the borders of their tract. In order to ensure that I am examining exposures to crime occurring within comparable distances, I construct my own geographic measures. In LA County, the average area of a census tract is 4.48 square kilometers. With this in mind, I calculated the number of violent crimes that occurred

within 1 kilometer of each activity space location for each respondent. In order to put this in perspective, a radius of 1 kilometer yields an area that is slightly smaller than that of the typical census tract in LA County and thus captures violent crime incidents occurring within what can reasonably be thought of as the neighborhood surrounding each of the activity space locations.

I split the resulting file by location type, examining home and non-home locations separately. I edited the file with two considerations in mind: timing and location overlap. First, for both types of locations, I excluded incidents that occurred after the respondents' interview date (provided in the LAFANS data) or more than 12 months prior.

Second, I examined overlap in the 1 km radius areas around home and non-home locations. For non-home locations, I excluded incidents that were within the specified distance of both the respondent's home and at least one non-home location. This is done so that exposure to crime in non-home locations is indicative *only* of crime incidents that respondents would not have been exposed to in their home neighborhoods. Also, for non-home locations, incidents that occurred within 1 km of multiple locations were only counted once. The total number of violent crimes around respondents' non-home activity destinations is therefore defined as a count of the number of unique incidents that occurred within 1 km of any non-home location during the last 12 months for a given respondent. Similarly, the total number of violent crimes around respondents' homes was defined as a count of incidents occurring within the specified distance and time frame.

Given the distribution of the resulting count variable, I categorized counts of violent crimes that occurred near each type of destination (home, workplace, and other destination) into three categories: 0, 1 to 5, and more than 5. The timing of exposure was measured using a measure split into the following categories: no exposure during

the last 12 months (1), exposure during only one quarter (2), exposure during 2 or three quarters (3), and exposure in each quarter of the past year (4). This measure was again constructed for each of the three types of location (home, workplace, and other destination). This measure is intended to capture whether exposure to violent crime in a given location was frequent, a one-off event, or a more sporadic and perhaps less-predictable occurrence.

Finally, the measure of the combination of contexts in which individuals were exposed to violent crime was categorized as: no exposure (1), near one's home only (2), home and other destinations (3), other destinations only (4), home, workplace, and other destinations (5), and any other remaining combination (6).

Controls

Prior research indicates that CRP levels vary by gender and race/ethnicity. I therefore include a binary indicator of whether the respondent identifies as female (1=yes) and a five-category indicator of race/ethnicity with categories including non-Hispanic white, non-Hispanic black, Hispanic, non-Hispanic Asian, and other race/ethnicity. I adjust for immigration-related differences or life course effects by including an indicator of whether the respondent was born in the U.S. (1= foreign-born) and controlling for respondent age (in years). I account for marital status (married = 1), educational attainment (1= did not complete high school), and annual family income (logged). I also control for several important health behaviors, including whether the respondent engaged in any physical activity in the last seven days (1= yes), whether they have ever smoked (1= yes), and whether they drank any alcoholic beverages in the last 30 days (1= yes). Finally, I adjust for several factors related to the day that the dried blood spot sample was collected that may bias CRP estimates, namely whether the respondent had coffee (1= yes), whether they ate any

food that day (1= yes), whether they smoked (1= yes), and whether they use blood pressure medication (1= yes).

Analytic Strategy

I employ a series of OLS regression models in order to explore the relationship between CRP (logged) and exposure to violent crime. For each model, I first estimate the unadjusted relationship between the outcome and measure of place-based violent crime exposure of interest without controls and then estimate a model with all relevant controls included. Post-stratification sampling weights are included in the LAFANS data and are designed to adjust for characteristics of the sampling design. When applied to the full adult sample, the data may be interpreted as representative of the adult population of LA County.

In order to account for selection into the DBS sample, I adjust the sampling weights by extracting the probability of a given respondent being retained in the analytic subsample (see Morgan and Todd 2004; 2008). I thereby formulate a direct adjustment weight (see Rosenbaum 2002), calculated as the post-stratification weight multiplied by the inverse probability of being in the analytic subsample. Such an adjustment gives disproportionately more weight to those who were least likely to remain in my analyses (see Imbens 2004). This weighting adjustment helps to reduce the amount of bias in any inferences from the relatively small subsample who took the DBS assessment to the broader population of adults in L.A. County.

The crime data I utilize in this study represents the largest available dataset of geocoded crime incidents that occurred during the study time period. It is important to note that some police jurisdictions do not provide incident reports to the L.A. County Sheriff's database and it therefore does not contain every incident that occurred in the relevant time frame. However, this database provides information on a very large

number of incidents (1,221,378 total incidents or an average of 305,345 violent crime incidents per year for each of the four years included in the data) and includes incidents occurring in a wide range of neighborhoods throughout the county. Respondents are perhaps exposed to more crime than my estimates capture and there may be respondents who are categorized as having no exposure who have actually been exposed to violent crime. To the degree that my estimates identify a relationship between exposure to crime and CRP, they may represent the lower bound or a conservative estimate of the actual relationship.

In order to establish whether non-residential exposures to violent crime are related to CRP (*Hypothesis 1*), I first estimate the relationship between CRP and the number of violent crimes (0, 1 to 5, or More than 5) near a given type of destination during the prior 12 months. Adjusted and unadjusted relationships between CRP and the violent crime measure are presented both separately and together. Next, I test the relationship between CRP elevation and the timing of exposure to violent crime (*Hypothesis 2)*. Finally, I estimate a model that includes the categorical indicator of the combination of contexts in which a violent crime occurred in order whether exposure in multiple contexts is associated with higher CRP than exposure in just one context (*Hypothesis 3)*.

Results

Descriptive statistics for key variables included in the analyses are presented in Table 1. The mean plasma-equivalent CRP concentration is 2.05 mg/L. Approximately 68.5 percent of the sample had at least one violent crime occur within 1 kilometer of their home during the year prior to the interview. For just over a third of respondents, violent crimes occurred near their homes in each quarter of the prior year. About 21.1

percent had more intermittent exposure, and 13.1 percent of respondent had exposure to violent crime near their homes in just one quarter of the year.

Non-residential exposures to violent crime were more common than residential exposures, overall, with 79.6 percent of respondents having a violent crime occur near one of their activity space destinations and 29.8 percent of the respondents having one or more violent crimes near their workplaces. Around other activity destinations, exposure to violent crime was typically more consistent; 57.5 percent of the sample had at least one violent crime occur near an activity destination in each quarter of the year, 16.5 percent experienced intermittent exposure, and only 5.6 percent experienced exposure during just one time period. About 40.5 percent of respondents had one or more violent crime occur near their home and at least one other non-residential location and 5.3 percent had exposure to violent crime near their homes only.

Next, turning to my hypotheses, I first test whether adults who had violent crime incidents near their homes have higher CRP levels than those who had no such exposure. Regression results for these models are reported in Table 2. Model 1 in Table 2 reports unadjusted results from a model including the categorical indicator of residential neighborhood-based exposure to violent crime. Respondents who had 1 to 5 violent crimes occur near their homes in the past year have CRP concentration (logged) that is approximately 0.698 higher than those who had zero violent crimes occur near their homes. This relationship is significant even after sociodemographic controls are added in Model 2 ($p < 0.05$). CRP is also higher for those who had 5 or more crimes occur near their home, but the difference does not achieve statistical significance.

I repeat this analysis for the other types of locations, including workplace and other destinations. Individuals who are exposed to more violent crime near their place of work (either 1 to 5 incidents or More than 5 incidents) do not have significantly

higher CRP than those who are exposed to none. Exposure to more violent crimes near other destinations is associated with higher CRP, but only for those who are exposed to 5 or more incidents ($b = 0.474$; $p < 0.05$). Finally, in Models 5 and 6, I include the measures of exposure in different types of contexts in the same model. Even after adjusting for exposure in home neighborhoods and near activity space destinations, individuals who have between 1 to 5 violent crimes occur near their home have significantly higher logged CRP ($b = 0.646$, $p < 0.01$). Those who have 5 or more violent crimes near other destinations also have higher logged CRP levels, although the differences is only marginally significant ($b = 0.418$; $p < 0.10$). Taken together, these results provide some support for *Hypothesis 1:* exposure to violent crime near one's home is associated with higher CRP levels (but only for those who were exposed to between 1 to 5 incidents) and exposure to violent crime in non-residential locations is related to CRP (but only for other destinations and not for workplaces). Running contrary to *Hypothesis 1*, when adjusting for exposure in one's home neighborhood, the relationship between exposure in other activity space destinations and CRP is only marginally significant.

In Table 3, I present the results from models estimating the relationship between the timing of exposure to violent crime during the past 12 months and CRP. Similar to Table 1, I first present the unadjusted results and then I present the results when controlling for sociodemographic variables. I estimate the relationship between exposure in each of the three types of locations separately and then together in the final model. Individuals who experience exposure in their home neighborhoods in only one quarter of the past year have higher CRP than those who experienced no exposure ($b = 0.528$; $p < 0.05$), as do those who experienced exposure in two or three quarters of the year ($b = 0.598$; $p < 0.01$). For other destinations (Models 5 and 6), exposure to violent crime is only significantly related to elevated CRP levels when

violent crimes occurred in each of quarter of the past 12 months. These relationships remain significant even after adjusting for exposure in home and work environments. These results provide some support for Hypothesis 2, especially in the case of other destinations. For other destinations, there is some evidence that more consistent exposure to violent crime over time is related to elevated CRP. However, home proximity to violent crime, recent and sporadic events are significantly related to higher CRP whereas consistent exposure is not.

Finally, I examine the relationship between the combination of contexts in which exposure occurred and CRP. These results are presented in Table 4. CRP is higher among individuals who have violent crime near their homes ($b = 0.736$; $p < 0.05$), those who have violent crimes in near their homes and other destinations ($b = 0.591$; $p < 0.05$), and those who have violent crimes near their homes, workplaces, and other destinations ($b = 0.681$; $p < 0.05$). These results provide some evidence for *Hypothesis 3* in that exposure to violent crime in multiple environments is associated with elevated CRP. However, exposure to violent crime in multiple environments is not related to CRP levels that are higher than those associated with exposure at home only, which does not provide support for my original hypothesis.

Discussion

Elevated C-reactive protein levels are predictive of poor future cardiovascular events, and are connected to the development of numerous other serious health issues (Sakkinen et al. 2002; Pradhan et al. 2001). While it is commonly understood that CRP production is linked to prolonged or repeated exposure to physical and psychological stressors (Owen et al. 2003), the relationship between CRP and environment-based exposures is underexplored. Specifically, individuals' daily activity patterns may consistently expose them to environments characterized by

violent crime, a particularly potent source of stress, or they may provide for contrasting exposures. In this study, I examined the connection between spatial proximity to violent crime and CRP among adults in Los Angeles County. My results provide further evidence of the important impacts of neighborhood-based exposures, and highlight the physical toll that consistent environment-based exposure to violent crime takes on cardiovascular health.

My findings clearly demonstrate a strong positive relationship between CRP and residing in a neighborhood where violent crimes have occurred. Exposure to violence near one's home, even if it is not a consistent or regular occurrence, is associated with significant elevations of CRP. Similarly, exposure to violent crime that is limited to one's residential context and is not part of larger pattern of exposure in other contexts is associated with elevated CRP levels, at least compared to those who experience no place-based exposures.

These results provide further evidence that neighborhood contexts play an important role in shaping residents' health. While I do not explicitly explore the mechanisms whereby exposure to violence produces CRP elevations in this study, my results are consistent with prior work highlighting the health impacts of environment-based exposure to crime. Previous studies indicate that exposure to crime is tied to increased feelings of fear, anxiety, and depression (Richardson 2017; Foster et al. 2017; Browning, Cagney, Iveniuk 2012). Crime is disruptive to sleep patterns, and impacts the frequency with which residents engage in outdoor physical activity (Richardson 2017). My results indicate that neighborhood-based exposure to violence ultimately has implications for residents' cardiovascular health in ways that may shape or contribute to broader health disparities.

Exposure to violence in non-residential locations, aside from one's workplace is also associated with higher CRP levels. These results highlight the nuances of place-

based exposure and indicate the need for more activity space research. The reasons for the seeming significance of exposure in one type of context but not in others is understudied. Examining the characteristics of non-residential spaces in which individuals spend time provides a more holistic picture of the totality of the health-relevant exposures an individual may encounter while navigating daily life. It also provides insight into the complex and important ways these exposures may combine with or exacerbate the impacts of crime encountered in residential spaces.

Specifically, I find that non-residential exposure to violence is particularly meaningful for CRP when it occurs frequently and consistently over a long period of time. Furthermore, CRP is significantly higher for those exposed in multiple contexts. Individuals may be less aware of violent crimes that occur in places that they visit during the day unless such incidents occur regularly and frequently. Individuals who are also exposed to violence near their homes may also be more aware of or alert to crime occurring in other contexts.

My analyses are not without limitations. First, CRP was only measured once and I am therefore unable to examine how changes in crime may be associated with changes in CRP levels. A research design including multiple measurements of CRP would enable a more rigorous examination of a causal link between exposure to violence and CRP.

Second, I limit focus here on only one feature of respondents' spatial contexts—violent crime. Violent crime rates may proxy or occur concurrently with other neighborhood-based stressors. For example, violent crime may be related to lower neighborhood collective efficacy, or occur in neighborhood environments where other non-violent crimes are also a regular occurrence. Future research should explore the characteristics of the social environment that may mediate the relationship between violent crime and CRP. More insight is also needed into whether exposure to other

types of crime are similarly associated with CRP and whether these relationships vary depending on where the exposure occurred.

In a similar vein, this study does not other explore potential mechanisms or anything that may mediate the relationship between violent crime exposure and CRP. Future studies need to better explore the pathways whereby neighborhood-based exposures are connected to cardiovascular health. Lastly, my measures of activity spaces are limited to a handful of possible locations that individuals likely visit. However, the locations that are reported include places that respondents regularly and repeatedly visit (e.g., places of worship and grocery stores) and places that they likely spend a large portion of time in each week (e.g., workplaces). In seeking to capture the environment-based stressors that individuals encounter, the approach employed in the LAFANS data therefore likely represents a fairly good proxy. New and innovative studies are implementing data collection procedures that involve real-time location tracking using GPS technology. These studies may provide better insight into true total of stressors that individuals encounter while navigating daily life.

As noted previously, all studies of neighborhood and activity spaces have issues with selection. Individuals are not randomly assigned to neighborhoods, nor are their activity spaces unconnected to both their health and their personal demographic characteristics. This work is not meant to be interpreted as causal, and more research is needed to better understand the role selection plays in activity spaces more broadly. While it is important to keep issues of selection in mind when considering results of neighborhood studies and this work is no way meant to be interpreted as presenting a causal relationship, these analyses provide important insight into the potential ways in which social environments may shape health.

Violence resonates far beyond the date of the immediate incident, and has implications for more than those initially involved (see also Sharkey 2018). The

impact of violent crime extends to those who share the neighborhood where it occurred (Sharkey 2010). Individuals who are consistently exposed to violence, whose daily lives bring them into environments characterized by violent crime, face dire ramifications for their cardiovascular health. Uncovering the health costs of daily exposure to stressors may reveal more about the racial/ethnic and socioeconomic disparities in health and longevity in the U.S. It also provides further evidence of the important role that neighborhood contexts play in shaping the health and wellbeing of residents.

Table 1. Descriptive statistics for key variables

Variables	Mean	(SD)
Outcome		
CRP	2.048	(0.215)
Log CRP	0.094	(0.106)
Number of proximate violent crimes over last 12 months		
Home		
0	0.315	
1 to 5	0.229	
More than 5	0.456	
Workplace		
0	0.702	
1 to 5	0.074	
More than 5	0.225	
Other destinations		
0	0.204	
1 thru 5	0.123	
More than 5	0.672	
Timing of violent crime exposure		
Home		
No exposure	0.315	
Exposure during only one quarter	0.131	
Exposure in two or three quarters	0.211	
Exposure in each quarter of the year	0.344	
Work		
No exposure	0.702	
Exposure during only one quarter	0.055	
Exposure in two or three quarters	0.043	
Exposure in each quarter of the year	0.200	
Other		
No exposure	0.204	
Exposure during only one quarter	0.056	
Exposure in two or three quarters	0.165	
Exposure in each quarter of the year	0.575	
Contexts near which violent crimes occurred		
None	0.125	
Home only	0.053	
Home and other destinations	0.405	
Other destinations only	0.119	
Home, workplace, and other destinations	0.223	
Other combination	0.076	
Sociodemographic variables		
Female	0.579	
Age	49.773	(1.954)
Race/ethnicity		
Non-Hispanic white	0.322	
Non-Hispanic black	0.101	
Hispanic	0.388	
Non-Hispanic asian	0.149	
Non-Hispanic other race	0.039	
Married	0.539	
Less than high school education	0.181	
Family income (in $1,000s)	60.172	(4.987)
Foreign born	0.060	
Health behaviors		
Physical activity	0.710	
Ever smoked	0.241	
Alcohol consumption	0.368	
DBS collection controls		
Had food	0.272	
Had coffee	0.080	
Had a cigarette	0.031	
Blood pressure medication	0.150	

Table 2. Coefficients from models regressing CRP on exposure to violent crime at home and in non-residential settings (*N*= 355)

	(1)		(2)		(3)		(4)	
	Coef.	(SE)	Coef.	(SE)	Coef.	(SE)	Coef.	(SE)
Number of proximate violent crimes over last 12 months								
Home								
0	- - -		- - -					
1 to 5	0.698 *	(0.271)	0.746 ***	(0.206)				
More than 5	0.200	(0.179)	0.288	(0.185)				
Workplace								
0					- - -		- - -	
1 to 5					0.037	(0.350)	0.227	(0.346)
More than 5					-0.098	(0.261)	-0.066	(0.193)
Other destinations								
0								
1 thru 5								
More than 5								
Sociodemographic variables								
Female			0.495 *	(0.192)			0.468 *	(0.196)
Age			-0.005	(0.007)			-0.004	(0.008)
Race/ethnicity								
Non-Hispanic white			- - -				- - -	
Non-Hispanic black			0.673 +	(0.391)			0.695	(0.424)
Hispanic			0.305	(0.211)			0.255	(0.200)
Non-Hispanic asian			0.008	(0.263)			-0.037	(0.294)
Non-Hispanic other race			0.286	(0.675)			0.684	(0.783)
Married			0.190	(0.185)			0.157	(0.185)
Less than high school education			-0.054	(0.245)			-0.050	(0.256)
Family income (in $1,000s)			-0.002	(0.001)			-0.003	(0.002)
Foreign born			-0.338	(0.323)			-0.072	(0.188)
Health behaviors								
Physical activity			-0.035	(0.156)			-0.067	(0.166)
Ever smoked			-0.110	(0.184)			-0.072	(0.188)
Alcohol consumption			-0.090	(0.202)			-0.031	(0.207)
DBS collection controls	X		X		X		X	
Constant	-0.301 +	(0.153)	-0.456	(0.440)	-0.034	(0.132)	-0.136	(0.444)
R-squared	0.088		0.184		0.037		0.135	

Table 2. Continued

	(5)		(6)		(7)		(8)	
	Coef.	(SE)	Coef.	(SE)	Coef.	(SE)	Coef.	(SE)
Number of proximate violent crimes over last 12 months								
Home								
0					- - -		- - -	
1 to 5					0.590 *	(0.251)	0.646 **	(0.202)
More than 5					-0.005	(0.226)	0.098	(0.217)
Workplace								
0					- - -		- - -	
1 to 5					0.124	(0.314)	0.303	(0.311)
More than 5					-0.231	(0.210)	-0.150	(0.208)
Other destinations								
0	- - -		- - -		- - -			
1 thru 5	0.188	(0.212)	0.245	(0.230)	0.197	(0.227)	0.242	(0.235)
More than 5	0.398 +	(0.205)	0.474 *	(0.210)	0.433 +	(0.246)	0.418 +	(0.231)
Sociodemographic variables								
Female			0.475 *	(0.195)			0.508 **	(0.188)
Age			-0.003	(0.008)			-0.005	(0.007)
Race/ethnicity								
Non-Hispanic white			- - -				- - -	
Non-Hispanic black			0.720 +	(0.428)			0.673 +	(0.382)
Hispanic			0.261	(0.207)			0.266	(0.212)
Non-Hispanic asian			-0.150	(0.282)			-0.015	(0.287)
Non-Hispanic other race			0.471	(0.751)			0.350	(0.687)
Married			0.159	(0.180)			0.193	(0.187)
Less than high school education			0.024	(0.229)			-0.015	(0.236)
Family income (in $1,000s)			-0.002	(0.149)			-0.002	(0.001)
Foreign born			-0.150	(0.282)			-0.359	(0.293)
Health behaviors								
Physical activity			-0.059	(0.159)			-0.069	(0.154)
Ever smoked			-0.149	(0.191)			-0.131	(0.187)
Alcohol consumption			-0.047	(0.213)			-0.056	(0.203)
DBS collection controls	X		X		X		X	
Constant	-0.376 +	(0.195)	-0.599	(0.512)	-0.461 *	(0.192)	-0.646	(0.478)
R-squared	0.056		0.157		0.109		0.204	

*$p < .05$ **$p < .01$ ***$p < .001$ (two-tailed).

Note: All models are weighted to adjust for sampling design, non-response, and selection into the DBS sample

Any exposure is defined as 1 or more violent crimes within 1 km of a given location during the past 12 months

Table 3. Coefficients from models regressing CRP on timing of exposure to violent crime during prior year (N = 355)

	(1)		(2)		(3)		(4)	
	Coef.	(SE)	Coef.	(SE)	Coef.	(SE)	Coef.	(SE)
Timing of violent crime exposure								
Home								
No exposure	---		---					
Exposure during only one quarter	0.456	(0.333)	0.528 *	(0.240)				
Exposure in two or three quarters	0.506 +	(0.260)	0.598 **	(0.191)				
Exposure in each quarter of the year	0.250	(0.197)	0.327	(0.210)				
Work								
No exposure					---		---	
Exposure during only one quarter					0.268	(0.424)	0.474	(0.406)
Exposure in two or three quarters					-0.785 *	(0.376)	-0.780 +	(9.426)
Exposure in each quarter of the year					-0.003	(0.267)	0.049	(0.220)
Other								
No exposure								
Exposure during only one quarter								
Exposure in two or three quarters								
Exposure in each quarter of the year								
Sociodemographic variables								
Female			0.487 *	(0.193)			0.461 *	(0.188)
Age			-0.004	(0.007)			-0.005	(0.007)
Race/ethnicity								
Non-Hispanic white			---				---	
Non-Hispanic black			0.725 +	(0.415)			0.639	(0.415)
Hispanic			0.298	(0.221)			0.251	(0.200)
Non-Hispanic asian			-0.108	(0.290)			-0.133	(0.290)
Non-Hispanic other race			0.335	(0.726)			0.719	(0.606)
Married			0.142	(0.184)			0.121	(0.187)
Less than high school education			-0.008	(0.244)			-0.118	(0.253)
Family income (in $1,000s)			-0.002	(0.002)			-0.003	(0.002)
Foreign born			-0.296	(0.331)			-0.216	(0.318)
Health behaviors								
Physical activity			-0.012	(0.158)			-0.054	(0.167)
Ever smoked			-0.157	(0.178)			-0.008	(0.196)
Alcohol consumption			-0.042	(0.124)			-0.050	(0.205)
DBS collection controls	X		X		X		X	
Constant	-0.318 *	(0.150)	-0.504	(0.454)	-0.037	(0.132)	-0.053	(0.382)
R-squared	0.067		0.169		0.060		0.160	

Table 3. Continued

	(5)		(6)		(7)		(8)	
	Coef.	(SE)	Coef.	(SE)	Coef.	(SE)	Coef.	(SE)
Timing of violent crime exposure								
Home								
No exposure					---		---	
Exposure during only one quarter					0.362	(0.282)	0.401 +	(0.218)
Exposure in two or three quarters					0.406 +	(0.244)	0.461 *	(0.186)
Exposure in each quarter of the year					0.037	(0.218)	0.080	(0.219)
Work								
No exposure					---		---	
Exposure during only one quarter					0.343	(0.383)	0.521	(0.377)
Exposure in two or three quarters					-0.790 *	(0.279)	-0.743 *	(0.309)
Exposure in each quarter of the year					-0.183	(0.251)	-0.087	(0.247)
Other								
No exposure	---		---		---		---	
Exposure during only one quarter	-0.004	(0.237)	0.036	(0.280)	0.041	(0.256)	0.016	(0.278)
Exposure in two or three quarters	0.168	(0.234)	0.254	(0.270)	0.071	(0.222)	0.138	(0.249)
Exposure in each quarter of the year	0.454 *	(0.214)	0.504 *	(0.210)	0.445 +	(0.238)	0.434 *	(0.204)
Sociodemographic variables								
Female			0.478 *	(0.197)			0.488 *	(0.188)
Age			-0.003	(0.007)			-0.004	(0.006)
Race/ethnicity								
Non-Hispanic white			---				---	
Non-Hispanic black			0.705 +	(0.423)			0.676 +	(0.393)
Hispanic			0.255	(0.211)			0.284	(0.221)
Non-Hispanic asian			-0.117	(0.283)			-0.181	(0.314)
Non-Hispanic other race			0.482	(0.697)			0.473	(0.519)
Married			0.159	(0.223)			0.094	(0.186)
Less than high school education			0.001	(0.223)			-0.076	(0.226)
Family income (in $1,000s)			-0.002	(0.002)			-0.002	(0.002)
Foreign born			-0.223	(0.301)			-0.244	(0.309)
Health behaviors								
Physical activity			-0.059	(0.162)			-0.030	(0.160)
Ever smoked			-0.132	(0.202)			-0.093	(0.196)
Alcohol consumption			-0.040	(0.217)			-0.003	(0.212)
DBS collection controls	X		X		X		X	
Constant	-0.367	(0.197)	-0.546	(0.487)	-0.422	(0.191)		
R-squared	0.068		0.166		0.117		0.218	

*$p < .05$ **$p < .01$ ***$p < .001$ *(two-tailed).*

Note: All models are weighted to adjust for sampling design, non-response, and selection into the DBS sample

Table 4. Coefficients from models regressing CRP on whether respondents were exposed to violent crime in their home neighborhoods, non-residential settings, or both (N = 355)

	(1)		(2)	
	Coef.	(SE)	Coef.	(SE)
Contexts near which violent crimes occurred				
None	- - -		- - -	
Home only	0.432	(0.410)	0.736 *	(0.372)
Home and other destinations	0.418 +	(0.241)	0.591 *	(0.252)
Other destinations only	0.256	(0.261)	0.410	(0.286)
Home, workplace, and other destinations	0.407	(0.295)	0.681 *	(0.281)
Other combination	-0.174	(0.268)	0.082	(0.367)
Sociodemographic variables				
Female			0.533 **	(0.194)
Age			-0.003	(0.007)
Race/ethnicity				
Non-Hispanic white			- - -	
Non-Hispanic black			0.702	(0.438)
Hispanic			0.257	(0.210)
Non-Hispanic asian			-0.084	(0.289)
Non-Hispanic other race			0.343	(0.746)
Married			0.145	(0.182)
Less than high school education			0.039	(0.226)
Family income (in $1,000s)			-0.002	(0.002)
Foreign born			-0.303	(0.310)
Health behaviors				
Physical activity			-0.034	(0.157)
Ever smoked			-0.177	(0.187)
Alcohol consumption			-0.084	(0.215)
DBS collection controls	X		X	
Constant	-0.370 +	(0.210)	-0.741	(0.524)
R-squared	0.066		0.172	

*$p < .05$ **$p < .01$ ***$p < .001$ *(two-tailed).*

Note: All models are weighted to adjust for sampling design, non-response, and selection into the DBS sampl

REFERENCES

Abada, Teresa, Feng Hou, and Bali Ram. 2008. "The Effects of Harassment and Victimization on Self-Rated Health and Mental Health among Canadian Adolescents." *Social Science and Medicine* 67(4):557–67.

Alba, Richard D., Logan, John R., 1991. "Variations on two themes: racial and ethnic patterns in the attainment of suburban residence." *Demography* 28 (3), 431–453.

Amuedo-Dorantes, Catalina, Bansak, Cynthia, 2006. "Money transfers among banked and unbanked Mexican immigrants." *Southern Economic Journal*, 374–401.

Bair, Sheila C.2003. "Improving Access to the US Banking System among Recent Latin American Immigrants." *Center for Public Policy and Administration.*

Barbarin, Oscar A. and Linda Richter. 2001. "Exposure to Violence, Coping Resources, and Psychological Adjustment." 71(January):16–25.

Brayne, S. 2014. "Surveillance and System Avoidance: Criminal Justice Contact and Institutional Attachment." *American Sociological Review* 79(3):367–91.

Britt, Chester L. 2001. "Health Consequences of Criminal Victimization." *International Review of Victimology* 8:63–73.

Browning, Christopher R., Brian Soller, and Aubrey L. Jackson. 2014. "Neighborhoods and Adolescent Health-Risk Behavior: An Ecological Network Approach." *Social science & medicine (1982)* 125:1–10.

Browning, Christopher R., Kathleen A. Cagney, and James Iveniuk. 2012. "Neighborhood Stressors and Cardiovascular Health: Crime and C-Reactive Protein in Dallas, USA." *Social Science and Medicine* 75(7):1271–79.

Broyles, Stephanie T. et al. 2012. "Elevated C-Reactive Protein in Children from Risky Neighborhoods : Evidence for a Stress Pathway Linking Neighborhoods and Inflammation in Children." 7(9).

Cagney, Kathleen A. and Erin York Cornwell. 2010. "Neighborhoods and Health in Later Life : The Intersection of Biology and Community." *Annual Review of Gerontology and Geriatrics.*

Cavazos-Rehg, P. A., Zayas, L.H., & Spitznagel, E. L. (2007). Legal status, emotional wellbe- ing and subjective health status of Latino immigrants. Journal of the National Medical Association, 99(10), 1126–1131

Chavez, L. (1998). Shadowed lives: Undocumented immigrants in American society (2nd Ed.). Fort Worth, TX: Harcourt, Brace, Jovanovich College Publishers.

Cornelius WA, Chavez LR, Jones OW. Mexican Im- migration and Access to Health Care.LaJolla, Calif: Center for US-Mexican Studies, UCSD; 1984

Danesh, J., Whincup, P., Walker, M., Lennon, L., Thomson, A., Appleby, P., et al. 2000. "Low grade inflammation and coronary heart disease: prospective study and updated meta-analyses." *British Medical Journal* 321: 199-204.

Donato, Katharine M., Massey, Douglas S., 1993. "Effect of the immigration reform and control act on the wages of Mexican migrants." *Social Science Quarterly* 74, 523–541

Flippen, Chenoa, 2012. "Laboring underground: the employment patterns of Hispanic immigrant Men in Durham, NC." *Social Problems* 59 (1), 21–42.

Ford, Daniel E. and Thomas P. Erlinger. 2004. "Depression and C-Reactive Protein in US Adults." *Archives of Internal Medicine* 164(9):1010.

Ford, Earl S. 2002. "Does Exercise Reduce Inflammation? Physical Activity and C-Reactive Protein Among U.S. Adults." *Epidemiology* 13(5): 561-568.

Foster S, Hooper P, Knuiman M, Christian H, Bull F, Giles-Corti B. 2016. "Safe Residential environments? A longitudinal analysis of the influence of crime related safety on walking". *International Journal of Behavioral Nutrition and Physical Activity* 13:22.

Fuligni, A. J., Telzer, E. H., Bower, J., Cole, S. W., Kiang, L., and Irwin, M. R. 2009. "A Preliminary Study of Daily Interpersonal Stress and C-Reactive Protein Levels Among Adolescents from Latin American and European Backgrounds." *Psychosomatic Medicine* 71: 329-333.

Galster, George and Erin Godfrey. 2005. "By Words and Deeds: Racial Steering by Real Estate Agents in the U.S. in 2000." *Journal of the American Planning Association* 71(3):251–68.

Geronimus, AT. 1992. "The Weathering Hypothesis and the Health of African Americn Women and Infants: Evidence and Speculations." *Ethnic Disparities* 2(3): 207-221.

Gill, J., Saligan, L., Woods, S., & Page, G. 2009. "PTSD is Associated with an Excess of Inflammatory Immune Activities." *Perspectives in Psychiatric Care* 45: 262-277.

Goldman, Dana P., James P. Smith, and Neeraj Sood. 2006. "Immigrants and the Cost of Medical Care." *Health Affairs* 25(6):1700–1711.

Greenman, Emily, Hall, Matthew, 2013. "Legal status and educational transitions for Mexican and Central American immigrant youth." *Social Forces* 91 (4), 1475–1498.

Grieco, Elizabeth M; Yesenia D. Acosta, G. Patricia de la Cruz, Christine Gambino, Thomas Gryn, Luke J. Larsen, Edward N. Trevelyan, and Nathan P. Walters. 2012. "The Foreign-Born Population in the United States: 2010." *American Community Survey Reports.*

Hall, Matthew and Emily Greenman. 2013. "Housing and Neighborhood Quality among Undocumented Mexican and Central American Immigrants." *Social Science Research* 42(6):1712–25.

Hall, Matthew and Jonathan Stringfield. 2014. “Undocumented Migration and the Residential Segregation of Mexicans in New Destinations.” *Social Science Research* 47: 61-78.

Hall, Matthew, Greenman, Emily, Farkas, George, 2010. “Legal status and wage disparities for Mexican immigrants.” *Social Forces* 89 (2), 491–513.

Hipp, John R. 2010. “Resident Perceptions of Crime and Disorder: How Much is ‘Bias’, and How Much Is Social Environment Differences?” *Criminology* 48(2):475–508.

Holmes, Louisa M. and Enrico A. Marcelli. 2012. “Neighborhoods and Systemic Inflammation: High CRP among Legal and Unauthorized Brazilian Migrants.” *Health & Place* 18(3):683–93.

Huckfeldt, Robert R. 1983. “Social Contexts, Social Networks, and Urban Neighborhoods: Environmental Constraints on Friendship Choice.” *American Journal of Sociology* 89(3):651–69.

Iceland, John and Melissa Scopilliti. 2008. “Immigrant Residential Segregation in U.S. Metropolitan Areas, 1990-2000.” *Demography* 45(1):79–94.

Inagami, S., Cohen, D.A., Finch, B.K., 2007. Non-residential neighborhood exposures suppresses neighborhood effects on self-rated health. Soc. Sci. Med. 65, 1779e1791.

Jenny, N. S., Yanez, N. D., Psaty, B. M., Kuller, L. H., Hirsch, C. H., & Tracy, R. P. 2007. “Inflammation Biomarkers and Near-Term Death in Older Men.” *American Journal of Epidemiology* 165: 684-695.

Sharkey, Patrick. 2018. *Uneasy Peace: The Great Crime Decline, the Renewal of City Life, and the Next War on Violence*.

Jones, Malia and Anne R. Pebley. 2014. “Redefining Neighborhoods Using Common Destinations: Social Characteristics of Activity Spaces and Home Census Tracts Compared.” *Demography* 51(3):727–52.

Kershaw, Kiarri N., Briana Mezuk, Cleopatra M. Abdou, Jane A. Rafferty, and James S. Jackson. 2010. “Socioeconomic Position , Health Behaviors , and C-Reactive Protein : A Moderated-Mediation Analysis.” 29(3):307–16.

Kiecolt-Glaser, J. K. et al. 2003. “Chronic Stress and Age-Related Increases in the Proinflammatory Cytokine IL-6.” *Proceedings of the National Academy of Sciences* 100(15):9090–95.

Kilpatrick, D. G. et al. 1985. “Mental Health Correlates of Criminal Victimization: A Random Community Survey.” *Journal of consulting and clinical psychology* 53(6):866–73.

Koss, Mary P. 1991. “Deleterious Effects of Criminal Victimization on Women’s Health and Medical Utilization.” *Archives of Internal Medicine* 151(2):342.

Krogstad, Jens Manuel; Jeffrey Passel and D’Vera Cohn. 2017. “5 Facts About Illegal Immigration in the U.S.” *Pew Research Center*.

Lu, MC; N. Halfon. 2003. “Racial and Ethnic Disparities in Birth Outcomes: a Life-Course Perspective.” *Maternal and Child Health Journal* 7(1): 13-30.

Lutgendorf, S. K., Garand, L., Buckwalter, K. C., Reimer, T. T., Hong, S., and Lubaroff, D. M. 1999. “Life stress, mood disturbance, and elevated interleukin-6 in healthy older women.” *Journals of Gerontology* 54A: M434-M439.

Ma, Y., Chiriboga, D. E., Pagoto, S. L., Rosal, M. C., Li, W., Merriam, P. A., et al. 2011. “Association Between Depression and C-reactive Protein.” *Cardiology Research and Practice* 2011:1-8.

Macintyre, S., & Ellaway, A. 2003. "Neighborhoods and health: An Overview." In Ichiro Kawachi, & Lisa Berkman (Eds.), *Neighborhoods and Health* (pp. 20e44). New York: Oxford University Press.

Massey, Douglas S., 1987. "Do undocumented migrants earn lower wages than legal immigrants?" *International Migration Review* 21, 236–274.

Massey, Douglas S., Akresh, Ilana Redstone, 2006. "Immigrant intentions and mobility in a global economy: the attitudes and behavior of recently arrived U.S. immigrants." *Social Science Quarterly* 87 (5), 954–971.

Massey, Douglas S., Denton, Nancy A., 1993. *American Apartheid: Segregation and the Making of the Underclass.* Harvard University Press.

Massey, Douglas. 1981. "Dimensions of the New Immigration to the United States and the Prospects for Assimilation." *Annual Review of Sociology* 7: 57-85.

Matthews, Stephen A. 2011. "Spatial Polygamy and the Heterogeneity of Place: Studying People and Place via Egocentric Methods." Pp. 127–43 in *Communities, Neighborhoods, and Health*.

Matthews, Stephen A. and Tse-Chuan Yang. 2013. "Spatial Polygamy and Contextual Exposures (SPACEs)." *American Behavioral Scientist* 57(8):1057–81.

Meier-Ewert, H. K., Ridker, P. M., Rifai, N., Regan, M. M., Price, N. J., Dinges, D. F., et al. 2004. Effect of Sleep Loss on C-reactive Protein, an Inflammatory Marker of Cardiovascular Risk. *Journal of the American College of Cardiology* 43(4): 678-683.

Nazmi, A., Diez Roux, A., Ranjit, N., Seeman, T. E., & Jenny, N. S. 2010. "Crosssectional and Longitudinal Associations of Neighborhood Characteristics with Inflammatory Markers: Findings from the Multi-Ethnic Study of Atherosclerosis." *Health & Place* 16: 1104-1112.

Owen, N., Poulton, T., Hay, F. C., Mohamed-Ali, V., & Steptoe, A. 2003. "Socioeconomic Status, C-reactive Protein, Immune Factors, and Responses to Acute Mental Stress." *Brain Behavior, and Immunity* 17: 286-295.

Owen, N., Poulton, T., Hay, F. C., Mohamed-Ali, V., and Steptoe, A. 2003. "Socioeconomic Status, C-reactive Protein, Immune factors, and Responses to Acute Mental Stress." *Brain Behavior, and Immunity* 17: 286-295

Peterson, R. D., & Krivo, L. J. 2010. *Divergent Social Worlds: Neighborhood Crime and the Racial-Spatial Divide*. New York, NY: Russel Sage Foundation.

Piore, M. J. 1979. *Birds of Passage: Migrant Labor and Industrial Societies*. NY: Cambridge U. Press.

Pollitt, R. A., Kaufmann, J. S., Rose, K. M., Diez-Roux, A. V., Zeng, D., & Heiss, G. 2007. "Early-Life and Adult Socioeconomic Status and Inflammatory Risk Factors in Adulthood." *European Journal of Epidemiology* 22: 55-66.

Pradhan, A. D., Manson, J. E., Rifai, N., Buring, J. E., & Ridker, P. M. 2001. "C-reactive protein, Interleukin 6, and risk of developing type 2 diabetes mellitus." JAMA 286: 327-334.

Pradhan, A. D., Manson, J. E., Rifai, N., Buring, J. E., & Ridker, P. M. 2001. "C-reactive Protein, Interleukin 6, and Risk of Developing Type 2 Diabetes Mellitus." JAMA 286: 327-334.

Qian, Zhenchao; Daniel Lichter. 2007. "Social Boundaries and Marital Assimilation: Interpreting Trends in Racial and Ethnic Intermarriage." *American Sociological Review* 72(1): 68-94.

Richardson, Andrea S. et al. 2017. "Pathways through Which Higher Neighborhood Crime Is Longitudinally Associated with Greater Body Mass Index." *International Journal of Behavioral Nutrition and Physical Activity* 14(1):1–10.

Ridker, Paul M.; Julie E. Buring, Jessie Shih, Mathew Matias, Charles H. Hennekens. 1998. "Prospective Study of C-reactive Protein and the Risk of Future Cardiovascular Events Among Apparently Healthy Women." *Circulation* 98: 731-733.

Robert, Stephanie A. 1999. "Socioeconomic Position and Health: The Independent Contribution of Community Socioeconomic Context." *Annual. Review of Sociology.* 25:489–516.

Ross, Catherine E. 1993. "Fear of Victimization and Health." *Journal of Quantitative Criminology* 9(2):159–75.

Sakkinen, Pamela; Robert D. Abbott, J. David Curb, Beatriz L. Rodriguez, Katsuhiko Yano, Russell P. Tracy. 2002. "C-reactive Protein and Myocardial Infarction." *Journal of Clinical Epidemiology* 55(5): 445-451.

Sampson, Robert J., Jeffrey D. Morenoff, and Felton Earls. 1999. "Beyond Social Capital: Spatial Dynamics of Collective Efficacy for Children." *American Sociological Review* 64(5):633–60.

Sastry, Narayan, Ann Pebley and Zonta M. 2002. "Neighborhood definitions and the spatial dimension of daily life in Los Angeles (CCPR Working Paper 033-04)." Los Angeles: California Center for Population Research, University of California–Los Angeles.

Segerstrom, Suzanne C. and Gregory E. Miller. 2004. "Psychological Stress and the Human Immune System: A Meta-Analytic Study of 30 Years of Inquiry." *Psychological Bulletin* 130(4):601–30.

Sewell, Abigail A. and Kevin A. Jefferson. 2016. "Collateral Damage : The Health Effects of Invasive Police Encounters in New York City." 93:42–67.

Sharkey, Patrick. 2010. “The Acute Effect of Local Homicides on Children’s Cognitive Performance.” *Proceedings of the National Academy of Sciences* 107(26):11733–38.

Sharp, Gregory, Justin T. Denney, and Rachel T. Kimbro. 2015. “Multiple Contexts of Exposure: Activity Spaces, Residential Neighborhoods, and Self-Rated Health.” *Social Science and Medicine* 146:204–13.

South, Scott J., Kyle Crowder, and Erick Chavez. 2005. “Geographic Mobility and Spatial Assimilation among U.S. Latino Immigrants.” *International Migration Review* 39(3):577–607.

Suro, Roberto, Bendixen, Sergio, Lowell, B. Lindsa, Benavides, Dulce C., 2002. Billions in Motion: Latino Immigrants, Remittances, and Banking. Report of Pew Hispanic Center and Multilateral Investment Fund.

Suro, Roberto, Bendixen, Sergio, Lowell, B. Lindsa, Benavides, Dulce C., 2002. “Billions in Motion: Latino Immigrants, Remittances, and Banking.” *Report of Pew Hispanic Center and Multilateral Investment Fund.*

Turner, H. A., A. Shattuck, S. Hamby, and D. Finkelhor. 2013. “Community Disorder, Victimization Exposure, and Mental Health in a National Sample of Youth.” *Journal of Health and Social Behavior* 54(2):257–74.

Vallee, J., Cadot, E., Grillo, F., Parizot, I., & Chauvin, P. 2010. “The combined effects of activity space and neighbourhood of residence on participation in preventive health-care activities: The case of cervical screening in the Paris metropolitan area (France).” *Health & Place,* 16, 838–852.

Vega, W. A., Sribney, W. M., Aguilar-Axiola, S., & Kolody, B. 2004. “12-month prevalence of DSM-III-R psychiatric disorders among Mexican Americans: Nativity, social assimilation, and age determinants.” *Journal of Nervous and Mental Disease*, 192(8), 532–541.

Willen, S. S. 2007. “Toward a critical phenomenology of “illegality”: State power, criminality and abjectivity among undocumented migrant workers in Tel Aviv, Israel.” *International Migration*, 45(3), 8-38.

Wodtke, G. T., D. J. Harding, and F. Elwert. 2011. “Neighborhood Effects in Temporal Perspective: The Impact of Long-Term Exposure to Concentrated Disadvantage on High School Graduation.” *American Sociological Review* 76(5):713–36.

Yinger, John, 1997. *Closed Doors, Opportunities Lost: The Continuing Costs of Housing Discrimination.* Russell Sage Foundation.

York Cornwell, Erin; Kathleen A. Cagney. 2017. “Aging in Activity Space: Results From Smartphone-Based GPS-Tracking of Urban Seniors.” *Journal of Gerontology: Social Sciences* 00 (00): 1-12.

Yu, Zhou and Dowell Myers. 2007. “Convergence or Divergence in Los Angeles: Three Distinctive Ethnic Patterns of Immigrant Residential Assimilation.” *Social Science Research* 36(1):254–85.

Zenk, S.N., Schulz,A. J., Matthews, S.A.,Odoms-Young, A.,Wilbur, J.,Wegrzyn, L., Stokes, C. 2011. “Activity space environment and dietary and physical activity behaviors: A pilot study.” Health and Place, 17, 1150–1161.